POPULAR
Computing
WEEKLY

Only 40p.

18 – 24 April 1985

It's the best selling weekly

Vol 4 No 16

CBM 64 in trouble

THE FUTURE of Commodore's best-selling C64 micro is suddenly in doubt following a decision last week by top retailers Boots and Lasky to discontinue sale of the machine

Commodore has also run into trouble with its new C16 and C128 models

Boots has already dropped the C16 – and other high street multiples seem likely to follow suit Additionally, neither Boots nor Lasky's will initially be stocking the C128

Although some High Street stores – including W H Smith – have stuck to the usual price of £199 95 for the Commodore 64, Boots was selling it at £149 95 Lasky now only has ex-demo models left which it is selling at £129 90

Once existing stocks of the Commodore 64 are sold out though, it now is very unlikely that either Boots or Lasky will re-order

Peter Frost, Boots' Assistant Merchandise Controller blames the situation on Commodore's price slashing on the Plus/4 Apparently this has adversely affected sales of the Commodore 64

"When Commodore cut the Plus/4 to £150, we told them it would add confusion to an already confused marketplace," he said "Effectively Commodore has a price structure geared to the old situation, with the Plus/4 as a logical step up from the Commodore 64, even though they have cut the price of the Plus/4.

"We have no plans to buy any more Commodore 64s because we cannot buy at a low enough discount to continue the £149 95 price."

Philip Holton, Lasky's computer buyer, said "We are clearing out our demo models at £129 90, and will not be stocking the 64 any more because the cost price is more than it is being sold for in the marketplace "

In addition to dropping the Commodore 64, Boots will also be getting rid of the C16 Again, there are no plans to buy more when present stocks have sold

continued on page 5 ▶



VIRGIN'S latest Commodore 64 game is *Gates of Dawn*, an animated arcade adventure The game, available within the next couple of weeks, costs £8 95

Bug Byte faces the liquidator

BUG BYTE, one of the veteran companies of the software industry, is insolvent.

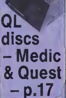
The company has appointed Christopher Chambers, of accountants Arthur Young McClelland Moores, to act as advisor to the company.

"The company will be liquidated," said Chris Chambers, who also acted as liquidator for Imagine Software last summer "As the company is insolvent it cannot continue to trade Liquidation is the only appropriate action "

Creditors should by now be notified of the time of the Creditors' meeting, when the liquidator, probably Chris Chambers, will be appointed

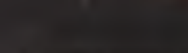
Bug Byte was one of the first companies to market its prod-

continued on page 5 ▶



INSIDE ❯ SMC'S COMMODORE 64 MOUSE TRAPPED ❯





Produced with technical assistance from:

DUNLOP TYRES
SP TYRES UK LIMITED

A mean evening. The world's leading sports car. A blocked road, and an uncharted maze of hillside lanes. The ingredients of the thrilling new rally simulation '911 TS'.

Drive it ..... NOW!

Every single 'ELITE' product carries the unique 'ELITE Holographic Sticker'. Make sure your copy does, it's your guarantee of quality.

Mail Order: Just send a cheque or P.O. payable to 'ELITE' or quote your visa number.

elite

Elite Systems Limited Anchor House Anchor Road Aldridge Walsall West Midlands Telephone (0922) 55852 Telex 335622 SPETEL G

View

What a mess Commodore has got itself in.

And everything was going so well in the months immediately after the launch of the Commodore 64. Then, just as the weight of C64 software being produced in the US seemed certain to overwhelm the Spectrum, instead of making strenuous production engineering efforts to refine the C64's design and bring its price down, Commodore appears to have panicked. Fearing some world-beating successor to the Spectrum perhaps, Commodore designed the Plus/4 as a direct 64 replacement with a better Basic which was cheaper to produce.

The trouble started when Sinclair unveiled its QL – and despite all its problems it did set new expectations for a home micro – 128K memory became a standard to match. And it was designed to sell in parallel with, rather than replace the Spectrum. By now it was too late to stop the Plus/4. It was launched to poor reviews – its built-in software was appalling, it offered no big advance on the C64 and sold for £50 more. Worst of all nobody would write software for it and it looked set to take sales from the C64.

Commodore stuck to its guns – instead of reducing the price of the C64 before Christmas and ditching the Plus/4 as a lost cause it pressed ahead. Its reaction was to begin work on a new C64 software compatible micro with 128K.

After losing market shares dramatically at Christmas because the 64 was overpriced it took the incredible step of trying to damp Plus/4s at £50 under the C64 and the inevitable happened – C64 sales plummeted.

So the C64 dies? If so it is all Commodore's fault.

Vol 4 No 16



Presents...

Futures...

Amstrad Star Game – Stock market on the CPC 464... Tracer Project concluded on BBC B. . .Our QL Mail Merge adapted for Quill version 2

Editor David Kelly **News editor** Christine Erskine **Features editor** Graham Taylor **Software editor** John Cook **Production editor** Lynne Constable **Editorial secretary** Geraldine Smyth **Group advertisement manager** David Lake **Advertisement manager** Alastair Macintosh **Assistant advertisement manager** Tom Watson **Advertisement Executive** Diane Holyoak **Classified executive** Diane Davis **Advertising production** Lucinda Lee **Administration** Therese Lacy **Managing editor** Duncan Scot **Publishing director** Jenny Ireland **Published by** Sunshine Publications Ltd 12-13 Little Newport Street, London WC2H 7PP Tel 01-437 4343 Telex 296275 **Typeset by** Publishers Reprographics Services Ltd 4 Roger Street, London WC1 **Printed by** Greenaway Harrison, Sutton Road, Southend-on-sea, Essex **Distributed by** S M Distribution London SW9 Tel 01-274 8611 Telex 261643

ABC

56 052 copies sold every week (Jan-June 1984 ABC)

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

Computer Trade Association Magazine of the Year


KOMPLEX
LEGEND

Commodore 64 hits trouble

◄ continued from page 1

"We were forced into selling the C16 at £79 95 by Dixons – then Smith's brought it down to £69 95 We are making very little or no money on it," said Peter Frost

Lasky will not be stocking the new Commodore 128 either, at least not at first Commented Philip Holton, "We are going to wait on the C128 until we see if it is viable in the range "

Boots also looks unlikely to stock the C128 According to Peter Frost, Boots Assistant Merchandise Controller, "We want to keep our range static – the priority is to sell through our existing stock rather than take on new lines in the first half of 1985 "

W H Smith, at least for the time being, is sticking with the C64 at £199 95 and the C16 at £59 95, according to the company's computer buyer George Bradbury

A spokesman for Commodore said, "Commodore is naturally concerned about the environment in which the trade is operating We are actively looking at ways to alleviate the retailers' problems and over the coming weeks will be discussing with our customers the best way to do this "

Tatung cuts Einstein

TATUNG has also slashed the price of its Einstein micro from £500 to £360 for the basic model

In addition, an agreement with High Street chain Dixon's means the Einstein plus monitor, BBC Basic, word processor, spreadsheet and six games is now selling at £499 in Dixon's branches Tatung had sold around 20,000 units of the Einstein at the beginning of 1985

The company also has a new micro under development – called the Micro Einstein – a more compact lower cost version of the Einstein

The Z80-based machine, comprising CPU monitor, disc drive and 80K Ram, will not be made available for some months yet, because of problems with production of its ULA chips Tony Adams, Tatung's commercial manager, denied reports that Tatung would launch the Micro Einstein in May, at the 'brown goods' Trade Show "We are not launching a new product at the Show in May, although we do have a number of new products in development at the moment "

● Tatung has recently merged its computer and television operations in Telford resulting in 70 redundancies, around 25 within the computer division.

Atari/Amstrad race for shops

THE RACE is on to see which of the two new micros launched this week – Atari's 130XE and Amstrads CPC 664 – will reach the shops first

The first Atari 130XEs look likely to be on sale in Lasky's within the next ten days at a price of £169 90 for the 128K machine

"The first shipment is at Heathrow at the moment, and we will have them in our shops next week " said Lasky's Philip Holton.

Lasky's is also likely to be taking the 512K Atari 520ST, which it hopes to stock in June "From what we have seen of the 520ST, it is a superb machine which exactly fits into plans," commented Philip Holton

Rumbelow looks set to be first with Amstrad's CPC 664 – as it was with the CPC 464 According to Rumbelow's marketing director Peter Jackson it will be in its shops in two to three weeks time No price for the 664 has yet been agreed between Rumbelow and Amstrad.

Despite the decision by Boots to restrict its new lines there is a possibility that it will take the Atari 130XE and ST ranges

"We are having discussions with Atari, and we have not yet made a definite decision to wait," said Boots' Peter Frost Boots will not, however, be taking the 664 despite its success with the 464

W H Smith has yet to decide which of the new machines it will take According to Smith's Martin Cresswell, the company is "looking at a number of additions to its range at the moment"

Sinclair float looks far off

SINCLAIR S proposed share flotation, already postponed from this spring, looks increasingly further away as the company's shares continue to trade at around £10 to £15 This compares with the value of £34 when 10% of the shares were privately placed in January 1983

"It is only a small number of the shares that are changing hands," said a Sinclair spokeman "It is also important to remember that 90% of the company is owned by Sir Clive Sinclair, but certainly the City has a great lack of confidence in the market at the moment

"The environment has not changed for the better as regards the float since it was postponed."

However, he felt that the lack of new products in the short term from Sinclair – the ½ Mb extension for the QL is now not expected before the end of this year – did not affect the company's credibility

"We are still the clear market leader in a problem-ridden industry, and it may well be that new machines in the 68000 field will help the QL by enlarging that market and giving the 68000 more credibility," he said.

Latest from Games Workshop

RUNESTONE is a sophisticated new adventure program from Games Workshop – combining *Lords of Midnight* – style 3D graphics and complex language analysis.

You control three characters – Morval, Eliador and Greymarel – moving them around a landscape of wastelands, mountains lakes, huts and citadels There are dozens of other characters with whom you can communicate using standard English sentences and the game incorporates a complex language parser

Games Workshop say the game can be played on several levels as an adventure in which you must find the Runestone of Zaphir or as a wargame where you must defeat an invasion by Kordomir the Dark One and his tribes of Orcs

The game is due for release later this month and costs £7 95 Details from Games Workshop, 27-29 Sunbeam Road, London NW10 6JP

Rodent horror for micro game

HORROR addicts will be delighted to hear of a new game to be released by Hodder and Stoughton.

Called *The Rats*, it is an adventure based on the best-selling book by James Herbert for the C64 and Spectrum at £9 95

Bug Byte

◄ continued from page 1

ucts professionally and enjoyed success with *Twin Kingdom Valley* and *Manic Miner*, before the latter's programmer, Matthew Smith, took the game to his own company, Software Projects

Bug Byte recently signed a deal with Argus, whereby Argus would handle the marketing for six titles It is unclear what will become of these titles

Converts to Ultimate

ULTIMATE'S best selling *Alien 8* is to be converted to the Amstrad CPC464 and the BBC B

Both versions will be straight copies of the Spectrum game, according to Ultimate's Louise Stamper and will be available by the summer on cassette, priced at £9 95.

Letters

Bigger and better?

Michael Fox (Ziggurat, vol 4 no 13) has hit the nail on the head People don't buy 16/32-bit micros for one reason only – they don't have any use for them

Look, for example, at the recording industry. We could all be laid-back listening to sweet music on laser disc Do we rush out and buy them? NO! Why not? Because we don't have any need for them.

It's the same with micros The ZX80, ZX81 and Vic 20 were good, but not quite good enough. Now we have Spectrums, Amstrads and CBM 64s, and they are all capable of producing more than the average user use understand. What percentage of owners could even attempt to write a 40K program in Basic.

From 1979 to 1983 Sir Clive got it right, but since the QL he's gone totally off course, and the trouble is, every other micro manufacturer has followed him.

Some bright spark has got to realise that it's not bigger and better micros we want, it's cheaper disc drives and cheaper printers

Let's get the best out of what we already have rather than going for bigger and better systems

Michael Sleight
109 The Avenue
Bentley
Doncaster

Loading time

On the Amstrad CPC464 the *Speed Write* command is very useful but I don't understand why software houses don't use it to speed up the loading of software

After all, 17 minutes to wait on *Sultan's Maze* is a bit long – so is ten minutes for *Codename Mat*. And I thought that having to wait four minutes for programs to load on the Spectrum was bad.

I have also got some interesting tips

To disable the *Escape* key type

KEY DEF 66,0,256 256 256

This will stop people breaking out of *Inputs* – something that the *On Break* instruction can not do To enable the *Escape* key once more simply type in.

KEY DEF 66,0,252,252,252

Finally, although the CPC464 doesn't have an inverse video command like the Spectrum, try PRINT "(Ctrl x) Hello (Ctrl x)". The control characters will not be printed and anything between them will be printed in inverse

Gareth Graham
47b Penline Road
Whitchurch
Cardiff

Cassette offer

In the February 21 issue there was a Free Cassette Labels offer On seeing this offer I immediately filled out an envelope and my form was in a postbox within ten minutes So far I have received nothing

I have been reading *Popular Computing Weekly* for over a year now and I have made use of many other offers you have made and this is your first cock-up.

S Powell

Only one cock-up in over a year? If only you knew. Everyone should definitely have received their cassette labels by now.

Can you give me something for a headache please?

Wrong statement

In the March 28 issue in *This Week*, you incorrectly stated that *National Soccer* is produced by Atlantis Software. Mavac EnterPrises are the producers of this program.

M Valentine
Mavac Enterprises



Available from all good Computer Games Shops or direct from Palace Software, 275 Pentonville Road, London N1 9NL.

Dear Palace Software,
Please send me the following cassette(s):-

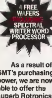
- Cauldron (CBM 64) @£7.99
- Cauldron (Spectrum) @£7.99
- Evil Dead (CBM 64) @£6.99
- Evil Dead (BBC) @£7.99
- Valkyrie 17 (CBM 64) @£9.99
- Valkyrie 17 (Spectrum) @£9.99

Please add 80p P&P to your order. Payment by cheque to Palace Software, Postal Order or by Access/Barclaycard No. ____

Name: ____
Address: ____

____ Postal Code

PALACE software



As a result of SMT's purchasing power, we are now able to offer the superb Rotronics Wafadrive data storage system for only £99.95*. But hurry! Stocks will not last long. You've read the reviews. Now's your best chance to buy!



SMT Special offer!

Wafadrive only £99·95*

Plus VAT and £2.00 post and packing

Integrated System

The Wafadrive is a complete system which contains the micro interface, two 128K drives, RS232 and Centronics ports, all in one attractively-styled, compact unit. There is a minimum of connecting leads and no extra boxes to clutter the desk top. Like the majority of professional systems, the units are dual drive. This offers the optimum balance between system flexibility and cost. Built-in serial and parallel interfaces allow the direct connection of just about every popular printer.

Fast and Reliable

The Wafadrive achieves very fast loading and saving, but not at the expense of reliability. Extensive research and the use of high grade materials ensure that the Wafadrive will give years of dependable operation. Data integrity is on a par with floppy disk. Three fully interchangeable blank wafers in three sizes – 128K, 64K and 16K – are also included. Low capacity wafers give faster access. They are therefore most suitable for program development applications. The high capacity wafers are suitable for more general data storage. Loading rate is well over ten times as fast as cassette!

Software

Armed with the comprehensive user manuals, blank wafers and superb Spectral Writer word processor, you'll have a professional system to be proud of. See the coupon below for details of the rapidly growing range of software to enable the programmer and games player to exploit the Wafadrive system to the full.

Buy Now!

Cheap, reliable mass data storage for the Spectrum has finally arrived – make sure you benefit from SMT's special offer. Clip the coupon below and your order will receive immediate attention.

FOR USE WITH THE SINCLAIR SPECTRUM



Please send me (enter as appropriate)

___ ROTRONICS Spectrum Wafadrive(s)	@ £117.21 each	___
___ 16K wafer(s)	@ £3.45 each	___
___ 64K wafer(s)	@ £3.60 each	___
___ 128K wafer(s)	@ £3.95 each	___
___ Heathrow/Nightflite II	@ £14.95 each	___
___ Space Wars/Seidelab Attack/Luna Anatu	@ £14.95 each	___
___ Bear Bovver/Wonga Loopy Laundry/World Cup	@ £9.95 each	___
___ Starbike	@ £7.95 each	___
___ ZAP machine code	@ £19.95 each	___
___ Sherlock	@ £14.95 each	___
___ RS232 lead	@ £9.95 each	___
___ Centronics lead	@ £9.95 each	___
All prices include VAT and P&P	TOTAL £	___

☐ I enclose a cheque/PO* made payable to SMT
☐ debit my Access/Barclay card* account no

(*delete as applicable)



Signature

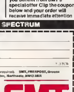
Name

Address

7.3 PCW

Send to (no stamp required). **SMT, FREEPOST, Greens Norton, Towcester, Northants NN12 8BR**

Please allow 28 days for delivery



Mail Order Protection Society registered number 3262/152



NEW RELEASES
6.95 48K SPECTRUM
Mighty Magus
Fantastic Voyage
QUICKSILVA
Quicksilva Mail Order,
P.O. Box 6, Wimborne,
Dorset BA21 7PY.
Telephone (0202) 891744.
WHSMITH
WOOLWORTH
John Menzies



This great new game is based on the Tyne Tees series Super Gran and produced in association with Tyne Tees Television. Super Gran will be available for the CBM 64, Spectrum 48K, C16 and Amstrad on April 2nd with versions for the BBC/B Electron, MSX, Atari and Einstein to follow.

TYNESOFT
COMPUTER SOFTWARE

Ring Tynesoft on (091) 414 4611 for your local stockist.

Kung fu

Program *Bruce Lee* **Price** £7.95 **Micro** Spectrum 48K **Supplier** U S Gold, Unit 24, Tipton Trading Estate, Bloomfield Road Tipton, West Midlands DY8 9AH.

Remember Bruce Lee, the 'Little Dragon' who kicked and crunched his way into a million hearts, not to mention jaws ribs and other even less mentionable parts? Well, now Bruce has been immortalised in the micro in this, the latest addition to the oriental games genre, and this time I'm going to resist the temptation to make martial arts noises

What we have here is basically a platform/maze game (oh no, I feel a non-martial arts 'yawn' coming on) enlivened by some fisticuffs. Quite why having your sprite duck, kick and chop should be so satisfying I'm not sure, but it beats the hell out of normal dodging and collecting games – as do various ninja and dreaded Green Yamos.

The adventure element is pretty lively too, with various lanterns to collect before doors will open and finally the deadly fire breathing wizard to face (he must have been eating his Green Yamos with Chilli Sauce). The graphics are nice and the animation positively balletic, but the switchable sound is pathetic. Why no ass-kickin' boogie?

With the pressure of pursuing baddies this is a worthy step up from plain platform adventures and despite my earlier promise is probably worthy of a 'Han-eee-aaaghhh!!'

Jobe Minson

In writing

Program *Microscript word processor* **Price** £49.95 **Micro** CPC 464 **Supplier** Amsoft, Brentwood House, 169 King's Road, Brentwood, Essex CM14 4EF.

This is the first C/PM format business software to be launched for a mass produced home micro at a suitably cut down price But it is still expensive compared to purpose written software such as *Tasword* and it's far from clear whether it's worth the extra money.

The main advantage is that each text file can be as long as there is room on the disc, facilitating printing and block movement of large documents Unfortunately, for single disc drive systems you must have a copy of script on every disc and that leaves an unbelievably small 26K free per disc Allowing for one back-up file, this is comparable to the amount you could fit into one *Tasword* file, and at £4 per disc is also a terrifyingly expensive way of storing data, for large projects it is cheaper to buy a second drive! (Anyway, we can soon expect an upgraded 'disc only' Tasword, which will also support very large files)

Even though *Script* has over 140K of code in the program, it doesn't always perform better than *Tasword* insert mode is better, you can find and replace paragraphs as well as words, delete options are a bit more versatile, blocks aren't forgotten as soon as they are moved, printer page layout is slightly better, you can embed 'rulers' in the text to change margins and tabs for different sections, and there is also the ability to do calculations on numbers within the document

Conversely, justification is not automatic, and to reformat an altered page you must save text, leave edit mode, *load* code for formatting and reload the text – a slow complex process which is matched by two keystrokes in *Tasword*. *Script* also seems to fail with an 'out of string space' error when reformatting large paragraphs Screen scrolling is excruciatingly slow as is printing since each line is put on the screen before it is put on paper There is also no means of customising the printer control codes, 'underlining is available' says the manual – but not on my machine.

The screen layout is poor – no help menus, no word count, no status reports such as 'insert on' This is aggravated by an apalling manual, minimalist in content and turgid in style There is not even a list of the available commands, forcing you to hunt for them through the book (and some are completely missing)

The program is saved by the fact that it allows a control language to be inserted into the text which can be executed at a later date This takes full advantage of disc handling, allowing files to be inserted at marked points within others such file merging can be nested many times), pauses for input from the keyboard alters formats, prints, etc So powerful is this feature that it can be used to create tailor-made applications packages for invoicing, mail merge, etc It's a very clever feature, but unless you have a specific use for this in mind, you will be better off sticking to *Tasword*.

Tony Kendle

Quick plug

Program *Plug It* **Micro** Commodore 64 **Price** £1 90 **Supplier** Scorpio Gamesworld, 307-313 Corn Exchange Building, Manchester

Plug It is yet another platform-type game, but at least it has the saving grace of being very cheap

You must plug the gap at the bottom of the screen before the giant above drops enough bombs to blow away the container of green gunge To stop him, a number of yellow plugs which are scattered around the platform structure, have to be collected avoiding various objects that get in the way.

Plug It could do with a bit of touching up to make it into a really good game Still, at the price, who's complaining?

Tom Hussey

Wargames

Program *Siege on the Volga* **Price** £8.95 **Micro** Spectrum 48K **Supplier** Omega Games, 2 Lyly House, Great Dover Street, London SE1 4EQ

This program causes me problems. It's a wargame, you see – a single player operational level simulation of the German assault on Stalingrad in 1942, with the eventual aim being to occupy 25 of the city's 26 areas, after eight turns. The problem for me as a reviewer is the inclusion of a small map and counters. Purists will argue that a computer wargame should be played solely on the micro.

On the other hand the fusion of silicon and cardboard chips seems a reasonable idea though keeping track of where a division is (they can spread over three zones) can still be tricky. At least there are no messy grid references or hex boards to bother about.

With two levels of difficulty and choices by menu, I found the game played relatively smoothly, but then again I was fighting board battles long before I got my first micro, so this sort of hybrid doesn't worry me. Sadly the Basic is badly protected and crashes too easily on wrong inputs. In the end it's best suited not to the general computer gamer but the cardboard general could find it a satisfyingly different experience to dice rolling.

John Minson

Pioneer spirit

Program *Mule* **Micro** Commodore 64/Disk Drive **Price** £14.95 **Supplier** Retail

In case you're wondering the letters M.U.L.E. stand for Multiple Use Labour Element. It's easy to see why this game was a US top-ten hit – it really appeals to the American pioneering spirit.

The action takes place on the undeveloped planet of Irata. Space settlers arrive by inter-galactic cruiser and stake their claims to plots of land. In the second phase of the game, each coloniser has to decide what he will produce. There are three options: a) to grow food, b) to go mining for Smithore or c) to produce energy.

Now, as with all good simulations, the different phases of the game are interactive. If, for example, you've selected a riverside plot of land, your best bet is to opt for growing food; similarly, the outfitting and installing your M.U.L.E. is a little tedious to describe here. However, it is perhaps significant that this part of the game usually ends in the pub at the centre of town.

After the production cycle, any surplus products are auctioned off. Here, the action is really fast and furious. With up to four players able to buy or sell simultaneously (two on joysticks, two on the keyboard), the computer gets red hot.

Random events such as planetquakes or pest attacks affect your production and you may be lucky enough to win a swamp-eel eating competition or a ballet-dancing contest. At the end of the day, the space-settler with the most resources wins.

One word of caution: although the beginner level of the game gets you playing straight away, it takes a little while to really get the hang of developing a sensible strategy. Don't despair. Stick with it, and you can look forward to hours of superb entertainment.

Tom Sussey

In code

Program *Disassembler/Relocator* **Price** £7.95 **Micro** Spectrum 48K **Supplier** Draysoft, 2 Bedford Way, Rugeley, Staffs WS15 1LB

This is a tape providing two useful functions for machine code programmers – disassembly and program relocation. The disassembler is pretty standard stuff, dumping out pages of instructions to the screen or a printer. It does handle numerous Z80 instructions, though, as well as the data that tends to follow the Restarts, with the curious exception of *RST 10s* in Interface 1 programs.

The more interesting part of the program is the disassembler – it takes up to 32K of code and can relocate it so it runs at another place. It is an 'intelligent' disassembler – that is, you give it a start address and it goes through the program working out which bits get executed, and which do not. If your program has more than one entry point the program may get the relocation wrong though.

During relocation certain errors may occur, pointing out to the user certain instructions that may have been relocated wrongly. The screen memory is used as a workspace area for the program, producing strange patterns during the process, and if you lose your nerve you can always press *Break* in the middle.

Once a program has been relocated it is saved to tape with a false header, so that when it's loaded it will go in its new location, but an option to use Microdrives. There are no restrictions on either the old or new addresses of the code to be relocated, even if it clashes with the relocation program.

The disassembler works perfectly, though most m/c programmers already have one along with a monitor anyway. Possible uses of the relocator are for moving programs that don't work with disc or microdrives connected, and adding normally incompatible programs together. If you have a need for such a relocator then this program is definitely worth considering.

Andrew Pennell


ADVERTISEMENT
THE FUZION OF MIND AND MACHINE
POPULAR
Computing
WEEKLY
It's the best selling
Confuzion hits UK
IBM has pulled out of the UZ home computer market, only one week before Atari launches the first of its new 128K machines
IBM has surprised the American home computer market by announcing last week that it is to stop production of the PC Jr machine
its keyboard, much criticized at launch. It is thought that margins were too slip on the PC Jr to justify continuing production
C128, positioned to compete directly in the UZ with the PC Jr and Apple IIc, will now only have the Apple model to contend with
POOLSWINNER
THE ULTIMATE POOLS PREDICTION PROGRAM
AVAILABLE FOR Spectrum (48K), Commodore 64, VIC 20 (+16K), AMSTRAD CPC 464, BBC B, Atari (48K), ZX81 (16K), Dragon, Apple II, IBM pc, ELECTRON
PRICE £16.00 (all inclusive)
NEW
FIXGEN 84/5
POOLSWINNER with FIXGEN £18.50 (all inclusive)
Fixgen alone £5.50 (yearly updates available)
COURSEWINNER V3
THE PUNTERS COMPUTER PROGRAM
PRICE £16.00 (all inclusive)
AVAILABLE (RETURN OF POST) FROM
VISA
phone 24 hrs
selec
SOFTWARE
phone 24 hrs
37 COUNCILLOR LANE, CHEADLE, CHESHIRE ☎ 061-428 7425
£17.95
PACE!
WANT TO LOSE WEIGHT? ...PACE IS THE ANSWER!
PRACTICAL! RECIPES FOR YOUR LIFESTYLE
PERSONAL! PACE USES YOUR COMPUTER TO DESIGN A DIET SUITED EXACTLY TO YOU!
COMPLETE! 2 CASSETTES PLUS A 200-RECIPE BOOK WITH UP-TO-THE-MINUTE HEALTH & SLIMMING FACTS
Please send me ______ copies of The PACE program at £17.95 each, to run on Acorn BBC B / Commodore 64
I enclose a cheque/PO for £ ______ payable to Practical Programs Ltd
Name
Address
Telephone
Or order by telephoning 01 794 4033
Money back guarantee. Allow 28 days for delivery
Mail to: Practical Programs Ltd., 7 Downside Crescent, London NW3 2AN
FAST PACE WEIGHT LOSS

Air attack

Program *Airwolf* **Micro** Commodore 64 **Price** £7 95 **Supplier** Elite Systems Ltd., 55 Bradford St., Walsall WS1 3QD

Stringfellow Hawke is a former Vietnam chopper pilot and the only man in the free world trained to fly the billion-dollar jet-helicopter Airwolf. This is a highly sophisticated combat helicopter capable of supersonic speeds, with a weaponry system way ahead of its time You take the role of Stringfellow Hawke as he pilots the Airwolf on a hazardous mission to rescue a team of brilliant scientists.

If you haven't made the connection yet, *Airwolf* was a hit television series that was broadcast recently Along with games like *The Dukes of Hazard* and *The Fall Guy*, Elite continue their policy of releasing games based on television programmes.

The scientists are imprisoned in a huge, underground terrorist base You have to manoeuvre round the fortress picking up the five stranded hostages on the way Life is far from easy The base is full of defence systems which have to be negotiated or destroyed – sometimes a bit of tricky flying is required, or maybe you have to shoot an exit through a wall. Not only is the action fast, but strategy is needed to work out how to solve what seem impossible problems.

I thought the background graphics and the animation of the helicopter were great Control of the helicopter is good but not, perhaps, so good as to *Choplifter*. The action might be a bit difficult for novice games-players, as pinpoint accuracy is required. Having said that, *Airwolf* is very playable A great game, and I think I'll watch the television series with added interest

Tara Hussey

Magicke

Program *Mighty Magus* **Price** £6 95 **Micro** Spectrum 48K **Supplier** Quicksilva, Carlton Lodge, 16 Carlton Crescent, Southampton, Hampshire SO1 2EJ

The most notable thing about this game is its revelation of a hitherto arcane corner of magicke – the bouncing mage! Sadly the wizardly sprite only leaps and bounds so athletically because this is nothing more than a multi-level platform game, attempting adventure overtones, with floors containing booby trapped tiles, ranging from teleports to trapdoors, which cause the otherwise sedate warlock to behave more like an outcast from *Track and Field*.

Scattered around the dungeon, in the quest to reach the bottom and slay the dragon, are piles of dirt and chests, which when searched are likely to contain magical bonuses, or even armour – though there's also a nasty skull about. Inevitably there are also wandering monsters to fight zap with a wizardly blast or even jump on

Though it at least avoids being a *JSW* clone and contains some smooth scrolling and animation, I thought *Mighty Magus* to be lacklustre There's too little challenge in jumping the tiles, too little excitement in finding the hidden objects hiding places may need searching twice so you press the 'S' key twice – big deal! The dungeon is randomly constructed and only proves how good a properly thought out play area is It's all proficient (colour/monochrome monitor choice, save 'Hi-Score' table) but hardly mighty

John Minson

Pop up

Program *Bodyworks* **Price** £14 95 **Micro** Spectrum 48K **Supplier** Genesis Productions, 30 Great Portland St., London W1N 5AD.

Dr Jonathan Miller pops up almost as much as his highly popular anatomical books. here's his name again, on a computer program now What a glossy package too, with booklet, full colour wall chart and seven programs on two tapes

Starting with cells it proceeds through circulation, respiration, the nervous system, digestion and muscle control, illustrating its text with animated diagrams and often concluding with a simulation, probably the best being one where you have to control hand, upper and lower arm muscles to press buttons

Oddly enough, the package lacks real blood and guts in every case I was surprised that the four minutes *Load* offered so little In several cases the animation of the illustrations seemed extraneous and didn't really enlighten me as to what was really happening One for the Sunday supplement set who buy their micros from Habitat.

John Minson

Blood and guts

Program *Fantastic Voyage* **Price** £6 95 **Micro** Spectrum 48K **Supplier** Quicksilva Ltd., Carlton Lodge, 16 Carlton Crescent, Southampton, Hampshire SO1 2EJ

Scene. The Control Centre

"We have a task for you. A famous scientist lies dying You'll be miniaturised and injected into his body so that you can save him."

"That sounds like a bum mission "

"Only if you take the wrong turning at the stomach."

"But isn't this the plot of an old movie?"

"That's right It starred Raquel Welch "

"You mean I get to meet a Raquel Welch sprite?"

"Sorry Cutbacks meant we couldn't afford the extra pixels."

"So what do I get?"

"A cudget sub – only it comes in kit form. Like I said – cutbacks You must find the pieces and assemble them in the brain. There's only an hour to do it and en route are viruses, growths and cholesterol blockages to be lasered."

"It sounds pretty bloody!"

"Internal organs are – and soft too You'll soon forget they're just platforms and the body's merely a vast maze You'll have some idea of where you are if you look to the right, but beware – if an infection breaks out you'll have to move fast to destroy it and few routes are direct. You'll also have momentum problems while swimming, and if you lose enough energy you turn invisible!"

"Tricky! But it looks good and sounds good."

John Minson

Spitfire 40

CHOCKS AWAY!

THE BEST THING SINCE THE REAL THING

A Spitfire flight simulation set in 1940. Ground features and realistic air combat

Spitfire40 is available from W H Smith, Boots, Spectrum and good software stores everywhere.

MIRRORSOFT

MIRRORSOFT Mirror Group Newspapers Ltd



Holborn Circus, London EC1P 1DQ Tel. 01 822 3500

A VERY SPECIAL COMPETITION

Target To rise through the ranks of the RAF elite to Group Captain, VC, DSO DFC

Reward For the lucky few, a day out at the Battle of Britain Museum plus a test flight in a high performance aircraft. Details in every ***Spitfire40*** pack

COMMODORE 64 (JOYSTICK ONLY)
DISK £12.95/CASSETTE £9.95

The art of making music.



The old way.



The new way.

How many of us have the feeling that if we could only write down music in the same way that we can write words, there would be no holding us

Well now you can.

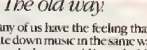
With Activision's Music Studio

Note by note, you can build a melody from the music in your head And see it on your TV screen as well as hear it

You can add harmonies Lyrics Change key Change tempo Change instruments (from a choice of 15 including keyboard!) You can scroll the melody through the TV screen and then print out the result

You can do all this with your computer and a joystick

If, musically, you're a beginner, don't worry Music Studio will help you create your own sounds step by step, with no previous knowledge of music whatsoever.



There's even a menu of fifteen assorted melodies ranging from Ravel to Joplin, for you to experiment with (Try scoring Mapleleaf Rag for Keyboard and Steam Train It takes two seconds with Music Studio!)

If you are a musician, you'll wonder how you ever lived without the Music Studio

If you're not a musician, you soon will be

£14 99 for the cassette and £19 99 for the disk from all good software stores

ACTIVISION
HOME COMPUTER SOFTWARE™

FROM SELECTED BRANCHES OF BOOTS WH SMITH, JOHN MENZIES LASKYS SPECTRUM RUMBELOWS WOOLWORTH AND GOOD COMPUTER SOFTWARE STORES EVERYWHERE

Heading to come

Hardware Medic Disc System **Micro** QL **Price range** £249.96-£959.90 **Supplier** Medic Datasystems, 76 Crainger Close, Basingstoke, Hants.

Hardware Quest Executive Disc System **Micro QL Price range** £295 00-£1537 00 **Supplier** Quest International Computers, School Lance, Chandlers Ford, Hants.

When Sinclair first launched the QL a computer with 128K of memory and two fast tape drives seemed great value for money, but since then, problems have appeared due to the speed at which the microdrives work and the amount of memory needed by the more powerful programs available To get over this a number of company have already launched extra Ram boards and disc drives Now two more companies, Quest Automation and Medic Datasystems, have produced their own systems for potential QL-upgraders

Medic first appeared taking orders at the last ZX Microfair in February Since then very little has been seen it will take them at least a couple of weeks more to come up with the finished product The reason for this delay is that when the original board was designed by an outside firm they got the information on the connector horribly wrong This wasn't noticed until after the first production run and a number of boards had been built and plugged in This has caused a delay in delivery dates and a number of damaged ICs

The main products soon to be available from Medic are shown in Table 1 To go

Quest's disc unit and memory board

with these there are a number of packages available, priced between £299.95 for 1 disc drive and 64K of Ram to £596 95 for 2 disc drives and 512K of Ram To go with the disc drive system there is of free software, which includes a program to transfer the Psion software to disc, Ram disc software, disc copying software and software for job control. The Rom also has built-in software which allows you to program the function keys, multi-task the Psion programs and a routine to compress files A disc Doctor is planned to be available shortly after the launch.

The review system was a pre-production version of the full package of 512K of Ram and dual 3 5 inch drives which give 720K of storage space each, when formated. Fully working copies of the switching software and compression software were also supplied.

Table 1 Medic System

Product	Price
64K Ram board	£99 95
128K Ram board	£128 98
256K Ram board	£198 98
512K Ram board (has to be powered from disk drive)	£259 95
Eprom experimentation card without Eprom	£24 95
Modem (available May)	£79 96
1 × 720K 3 5 inch disc drive + interface	£249 98
2 × 720K 3 5 inch disc drive + interface	£399 95

The main circuit board holds the Ram, together with the disc interface and a parallel interface, so if you don't buy the full system at once it will be possible to upgrade it when needed Note, if you want more than 256K extra memory you will also need the disc system as the QL alone is unable to supply the power needed. The board itself is able to control up to four disc units, and is designed to take a number of other products from Medic, one of which under development, is a modem planned to cost under £80 A

Medic main board and disc unit

nice touch on the board is a light emitting diode which shows if the memory on the Medic board is being accessed or not, which may be of some use if a program crashes

The parallel port is a full bi-directional port controlled from QDOS by using the name 'par' You may also set up an area of Ram to become a internal printer buffer Information is sent to the parallel port via the buffer so a file can be transferred to the buffer for printing and your program can continue running while it is printed

The discs are 3 5 inch drives as standard, and while the interface will take 5 25 inch drives, Medic only plans to sell the 3 5 inch drives, because they are more compact While 5 25 inch discs come in paper sleeves for protection and labels are used to write-protect the discs, the 3 5 inch discs come in a rigid plastic with a cover which slides across to protect the read/write slot and a small switch which you slide back to write-protect it. The only disadvantage at the moment is the cost of the discs which are about £5 against £3 for 5 25 inch discs, but this price should drop as more manufacturers start to use 3 5 inch drives

When using the disc drive system from Superbasic you simply use *'flp'* instead of *'mdv'*. This is the same as the name used by CST for their disc drives, so software written for one system should work on the other without any changes needed. Unlike CST though, Medic only plan to add a small number of additional commands for Basic in Rom Instead it plans to use the spare Ram memory for other programs and supply extra Basic commands on disc, allowing more control over multi-tasking programs and files

The Psion switching software (which is held in Rom) allows you to load up to four of the Psion (version 2) programs into memory depending on the amount of Ram you have and then allows you to move between them at will Even when I had all four programs loaded and running, each had about 50K to store information in and it took under half a second to move between programs There is only one limitation, the fact that only one copy of Quill may be loaded in at any one time

If you set up a Ram disc before loading the software you may move information between the program without ever having to use the microdrives or discs for temporary storage Such a system gives many of the benefits of the *Xchange* package found on the ICL One per Desk and other much larger computers If you

only own the old versions of the Psion programs this system would certainly make it worth while buying the newer versions for £50.

The Rom also holds two other programs. The first allows you to define the function keys and get back the last line entered, allowing you to correct errors in lines which have been entered but not accepted by Superbasic. The last program in Rom takes a file and compresses by up to 50%. This allows you to back-up files in such a way to cut down on the space needed.

Quest first announced its products in November, but since then they have changed the design of their boards and the prices have been increased to those shown in Table 2. Out of this range I have tested a final production version of the 256K Ram board, a 2 × 400K disc drive, the CP/M software and the Ram disc software.

The first problem with the disc system is that the QDOS software is supplied on a microdrive cartridge, so before you can use the disc drive you have to load in the software. When loaded this software takes up part of the QL's memory, meaning that some large programs may not be able to run without extra memory. This is seen when using Quill (version 2) which has to use microdrive two to store text in the same way as Quill (version 1) had to.

The name given to the disc drives from QDOS is 'fdv' unlike the 'flp', command used by Medic and CST. The format command is also different as you have to specify what size storage the disc will be formatted to and it is loaded in to memory from tape when needed. When I tried to format a disc in one of the 400K drives as a 800K disc it worked according to the

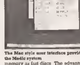
Table 2 Quest system

Product	Price
64K Ram board	£115.00
128K Ram board	£168.00
256K Ram board	£349.00
512K Ram board (needs power supply)	£678.00
1 × 200K 5.25 inch disc drive + interface	£286.00
1 × 400K 5.25 inch disc drive + interface	£418.00
1 × 800K 5.25 inch disc drive + interface	£499.00
2 × 200K 5.25 inch disc drive + interface	£469.00
2 × 400K 5.25 inch disc drive + interface	£579.00
2 × 800K 5.25 inch disc drive + interface	£895.00
CP/M - 68K on Floppy Disc	£89.50
Power supply	£64.50
Expansion Console	£138.00

software, but naturally it was impossible to use this space.

If you plan to add extra memory at the same time as the disc interface you will also need to buy a power supply and the expansion console also serves as a monitor stand/wrist-rest and is made out of black aluminium. If you only want a monitor stand/wrist-rest only, the box may be bought separately for £69.50.

To go with the Ram board, Quest sells Ram disc software which sets up areas of



The Mac style user interface provided by the Medic system

memory as fast discs. The advantage of such software is the speed at which information is transferred between the disc and other programs. The disadvantage of this system is that the information will be lost if the computer crashes, so information has to be backed up systematically to tape or disc. To use the software you 'exec—w' it in memory, and then use 'format' to set up the disc's size and even its name which starts out as 'rdv' may be changed. It is possible to set a Ram disc up under the name of 'mdv'. This causes all programs which previously accessed a

Table 3 Comparison of system timings (seconds)

	Medic 720K disc	Quest 400K disc	Microdrive 100K tape
Saving 32K of code	9s	19s	10s
Loading 32K of code	3.1s	3.5s	7.3s
Booting in Quill	9s	38s	18s

microdrive to now access the Ram disc.

The CP/M 68K software from Quest is the company's answer to making the QL a business machine. Quest's advert says that CP/M is the "worlds most widely used operating system". This may be true but it is the version of CP/M for Z80 computers known as CP/M 2.2 which has sold in such great numbers. Software for CP/M 68K is rather less in evidence – most of what I found can be bought to run under QDOS at cheaper prices, or is supplied free of charge as one of the Psion programs. To try and improve software support you can read data from discs used with CP/M 86 on the IBM PC, but even fewer people use this version as there are much better operating systems available such as MS-DOS or PC-DOS.

To use this version of CP/M, it has first to be booted from a microdrive tape. You then have seven commands at your disposal allowing you control over the files held on tape or disc, but very little else. Out of the many files supplied there is an Assembler, a C Compiler and a text file which tells you that CP/M is now available on 68010 computers of little use as the QL has a 68008 CPU. CP/M is also available on microdrives at a cost of £99.50 but an additional OS-card is needed. This card performs some of the tasks carried out by the disc interface and fits into the main expansion port.

Overall, I would say that Quest have suffered from trying to be first on to the market place (and being second to CST, incidentally) and now have a system which is over priced and over sized. Both their boards are 247mm × 97mm and the disc drive is 140mm × 395mm × 188mm. Medic on the other hand has made a single board a bit bigger than Quest's but capable of holding the whole system. Medic's dual disc drive is also far more compact, measuring only 95mm × 285mm × 106mm.

There is also a difference in terms of speed between the two systems. Table 3 shows the outcome of a number of tests made on the discs. It takes so long to load *Quill* when using the Quest system because you have to load the discs operating system from microdrive first. The Medic system on the other hand automatically boots from disc instead of from microdrive.

Placing the CP/M operating system on the QL as Quest has done, I feel is a step in the wrong direction. While QDOS is able to run a number of jobs at once, CP/M can only handle one program at once. Programs written for the QL are also able to make use of the machine's hi-res/colour screen – good examples of this are the latest programs from Sinclair. CP/M programs on the other hand have to stick to a format which all CP/M computers can handle and so are text based with no colour or hi-res graphics.

In straight terms of cost, the full Medic system would be £595.95, certainly extremely price competitive. The equivalent system from Quest (without a parallel port) would be £1,477.

However, the Medic system is unlikely to be ready for a number of weeks – perhaps the wise buyer would do well to wait for its release before parting with any hard earned cash.

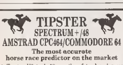
If you must buy a system now, you could try looking at the CST system (*Popular Computing Weekly* January 31) . but Medic should be well worth the wait.

Roger Thomas

Man or mouse?

Hardwere *Magic Mouse* **Price** £59 96 **Micro** Commodore 64 **Supplies** SMC Supplies, 11 Western Parade, Great North Road, Barnet, Herts (01-441 1282)

A mouse for the C64 I must admit that I was rather looking forward to road-testing the first C64 mouse. The potential for good graphics on this machine has always been apparent, but the system software makes no concession to the budding artist. A mouse, with suitable software, should transform the C64 But not this mouse.



They tell me that I was given a pre-production prototype mouse, well-used by the developers and other reviewers before me It is possible that the software was also a pre-production version. The instructions were certainly pre-production drafts However, even making due allowances, I found it very difficult to get very excited about the Magic Mouse

The package includes the mouse itself, a manual, and software on tape or disc Fast-loaders are used for both tape and disc software which do a very good job of cutting down the thumb-fiddling time Four main programs are included in the software, a high-resolution drawing program, a sprite designer, an almost identical icon designer (these are really just user-defined graphic characters to use with other software, but who am I to be pedantic), and a mouse controller program (which was not supplied with the review mouse, but which is intended to allow the mouse to be used with other programs)

In principal, the high resolution drawing program was just the sort of thing that I have been looking for Unfortunately, the final result is not as impressive as it should be In my opinion the program is rather cumbersome to use and slow, although the lack of speed can to some extent be attributed to the problem of mixing high-resolution lines and low-resolution C64 colour

A full-page menu gives the usual options for a variety of line-types, spray-can effects, text entry, colour-control, and so on, but although this gives a full screen to draw on I found it nowhere near as easy to use as the pull-down (or pop up?) menus provided by most other mouse systems

The sprite and icon designer software is useful and does all that it should Here again, though, I thought that the software lacked polish. Sprites and icons can be saved to disc or tape (although you don't get the choice, it depends which medium you are using with the mouse) for inclusion in other programs

SMC are intending to produce mice for the BBC, the QL, and the Amstrad My advice is try it before you buy it

John Cochrane

Cricket's Revenge

Your mission – to boldly jump where no cricket has jumped before – on CBM 64 by *Jolyon West*

You are one of the last surviving crickets, the rest having been exterminated by Farmer Jones

You must gain your revenge on him by escaping through his crops while collecting his prize fruit – but things are not as easy as they seem, as if you take too long he may return.

You move from left to right using a joystick in Port Two, collecting the fruits between the rows of crops (when you move off the top of the screen you appear on the bottom) Note that the gap in the crops will only appear after you collect the fruit

Program Notes

20	Screen and border white
50	Switches to new character set
60	Sets sound to highest volume
80-130	Sets variables
170	Resets internal clock
210-220	Prints current time and best time
230	Checks game completion
240	Checks time taken
250	Returns value from joystick
260	Moves cricket down screen
270	Moves cricket up screen
280-290	Checks for cricket off screen
300	Checks for passing to next column
310-340	Prints cricket on screen
350-370	Makes chirpy sound
380	Prints space over cricket
400	Returns to beginning of loop
2000-2030	Prints random position for fruit
3000-3040	Prints position for hole in crops
5000-5090	Prints crops on screen
6000-6230	Prints instructions
10000-10100	High score routine
12000-12480	Extermination of cricket
13000-13230	Searches keyboard
20000-20260	Hi-res character data

Star Game

```
1 REM ********************************
2 REM ********************************
3 REM ****** CRICKET'S REVENGE ******
4 REM ******                  ******
5 REM ******        BY        ******
6 REM ******                  ******
7 REM ******    JOLYON WEST   ******
8 REM ********************************
10 REM********************************
11 REM
20 POKE53281,1 POKE53280,1
30 PRINT "PLEASE WAIT WHILE USER-DEFINED ,."CHARACTERS ARE SET UP."
40 GOTO20000
50 POKE53272,(PEEK(53272)AND240)OR14
60 POKE54296,15
70 HS$="000000" CC=0
80 REM *** INITIALIZATION ***
90 SM=1104 CM=55376 SC=54272 HG=64 HH=65 C1=66 C2=67 FR=68 E1=69 E2=70 E3=71
100 E4=72 E5=73 F1=74 F2=75 FF=76 SP=32 RE=2 BL=6 BR=9 OR=13
110 DG=0 MC=0 EX=0 JU=0 FLASH=0 CO=0 RO=0 CH=1 RH=0 CF=0 RF=0 CU=0 RW=0
120 JO=0 DD=0 A$="" JUNK$="" T$="STILL" S$="000000" H=RND(-TI)
130 T=INT(RND(0)*30)+1
140 GOSUB6000
150 GOSUB5000
160 GOSUB2000
170 TI$="000000"
200 REM *** MAIN LOOP ***
210 PRINT "  TIME - ",MID$(TI$,3,2)," ",RIGHT$(TI$,2),
220 PRINT "    BEST TIME - ",MID$(HS$,3,2)," ",RIGHT$(HS$,2)
230 IFCO>36THENGOTO10000
240 IFVAL(TI$)>100+TTHENGOTO12000
250 JO=PEEK(56320)
260 IFJO=125THENRO=RO+40
270 IFJO=126THENRO=RO-40
280 IFSM+RO+CO>SM+880+COTHENRO=0
290 IFSM+RO+CO<SM+COTHENRO=880
300 IFJO=119ANDPEEK(SM+RO+CH)=HHANDPEEK(SM+RF+CF)=SPTHENCO=CO+2 CF=CF+2 GOSUB200
0
310 POKESM+RO+CO,C1 POKECM+RO+CO,BL
320 FORDE=1TO10 NEXTDE
330 POKESM+RO+CO,C2 POKECM+RO+CO,BL
340 FORDE=1TO10 NEXTDE
350 POKESC+4,0
360 POKESC+4,33
370 POKESC+1,217 POKESC,189
380 POKESM+RO+CO,SP
400 GOTO200
2000 REM *** RND NUMBER FOR FRUIT        POSITION ***
2010 RF=INT(22*RND(0))*40
2020 POKESM+RF+CF,FF POKECM+RF+CF,RE
3000 REM *** RND NUMBER FOR HOLE IN      HEDGE ***
3010 RH=INT(22*RND(0))*40
3020 IF   >0THENCH=CH+2
3030 POKESM+RH+CH,HH POKECM+RH+CH,OR
3040 XX=1 RETURN
5000 REM *** CREATE SCREEN ***
5010 FORCU=1TO37STEP2
5020 FORRW=0TO880STEP40
5030 POKESC+4,0
5040 POKESC+4,33
5050 POKESC+1,90 POKESC,254
5060 POKESM+RW+CU,HG POKECM+RW+CU,GR
5070 NEXTRW
5080 NEXTCU
5090 RETURN
6000 REM *** INSTRUCTIONS ***
6010 PRINT "CRICKET'S REVENGE"
6020 PRINT "________________"
6030 PRINT "YOU ARE THE LAST REMAINING CRICKET
6040 PRINT "ON THE EARTH, YOUR ANCESTORS HAVING"
6050 PRINT "BEEN KILLED BY THE MERCILESS"
6060 PRINT "FARMER JONES!"
6070 PRINT "YOUR TASK IS TO ESCAPE THROUGH"
6080 PRINT "HIS CROPS (-) AND STEAL HIS PRIZE FRUIT'
6090 PRINT " (^) IN THE FASTEST POSSIBLE TIME."
6100 PRINT "SPEED IS THE NAME OF THE GAME AS"
6110 PRINT "IF YOU TAKE TOO LONG HE MAY RETURN
6120 PRINT "AND EXTERMINATE YOU."
6130 PRINT "USE A JOYSTICK IN PORT 2"
6140 PRINT"TO MOVE YOUR CRICKET"
6150 PRINT "THE SCENE IS SET WITH FARMER JONES"
6160 PRINT"PLANTING HIS CROPS ....,GOOD LUCK!"
6170 FORJU=1TO10 GETJUNK$ NEXTJU
6180 PRINT"HOLD ANY KEY DOWN"
6190 FORDE=1TO300 NEXTDE
6200 PRINT"HOLD ANY KEY DOWN"
6210 FORDE=1TO300 NEXTDE
6220 GETA$ IFA$=""THEN6180
6230 PRINT" RETURN
10000 REM *** HIGH SCORE ROUTINE ***
10010 IFCC=0THENHS$="100000" CC=1
10020 S$=TI$
10030 IFS$<HS$THENHS$=S$ T$="NOW"
10040 PRINT "CONGRATULATIONS!"
16030 PRINT "YOU'VE COLLECTED ALL THE FRUIT"
10060 PRINT "AND EVADED FARMER JONES"
10070 PRINT "IN A TIME OF  ,MID$(S$,3,2) " ",RIGHT$(S$,2)
10080 PRINT "THE RECORD IS  ,T$
10890 PRINT " ,MID$(HS$,3,2),"  ,RIGHT$(HS$,2)
10100 GOTO13000
12000 REM *** EXTERMINATION OF CRICKET ***
13010 PRINT "HARD LUCK...YOU HAVE TAKEN"
12020 PRINT "TOO LONG!!"
12030 PRINT "FARMER JONES IS ABOUT TO RETURN"
```

```
12030 PRINT"FAMMER JONES IS ABOUT TO RETURN"
12040 PRINT"TO EXTERMINATE YOU'"
12050 FORFLASH=0TO15
12060 POKE53280,FLASH POKE53281,15-FLASH
12070 FORDE=0TO50 NEXTDE
12080 NEXTFLASH
12090 POKE53280,1 POKE53281,1
12100 FORDE=1TO2000 NEXTDE
12110 PRINT"J",
12120 FORMC=0TO18STEP2
12130 POKESM+439-MC,F1 POKECM+439-MC,0A
12140 POKESM+435-MC,C2 POKECM+435-MC,BL
12150 FORDE=1TU100 NEXTDE
12160 POKESM+439-MC,SP POKESM+439-MC,SP
12170 POKESM+439-MC-1,F2 POKECM+439-MC-1,BP
12180 POKESM+435-MC-1,C2 POKECM+435-MC-1,BL
12190 FORDE-1TO100 NEXTDE
12200 POKESM+439-MC-1,SP POKESM+435-MC-1,SP
12210 NEXTMC
12220 POKESM+416,C2 POKECM+416,BL
12230 POKESM+420,FF POKECM+420,BR
12240 FORDE=1TO500 NEXTDE
12250 PRINT"AARRGHH!!"
12260 POKESC+4,0 POKESC+5,0 POKESC+6,0
12270 POKESC+5,15 POKESC+6,0
12280 POKESC+4,129
12290 POKESC+1,17 POKESC,37
12300 FOREX=E1TOES
12310 POKESM+416,EX POKECM+416,BL
12320 FORDE-1TO200 NEXTDE
12330 NEXTEX
12340 POKESM+416,SP
12350 FORMC=0TO10STEP2
12360 POKESM+420-MC,F1 POKECM+420-MC,0A
12370 FORDE-1TO120 NEXTDE
12380 POKESM+420-MC,SP
12390 POKESM+420-MC-1,F2 POKECM+420-MC-1,0R
12400 FORDE-1TO100 NEXTDE
12410 POKESM+420-MC-1,SP
12420 NEXTMC
12430 POKESC+4,0 POKESC+5,0 POKESC+6,0
12440 PRINT"YOU HAVE BEEN EXTERMINATED BY"
12450 PRINT"FARMEP JONES"
12460 PRINT"BUT YOU WILL RETURN AS"
12470 PRINT"ANOTHEP CRICKET!"
12480 GOTO13000
13000 REM *** PRESS ANY KEY ***
13010 FORJU=1TO10 GETJUNK$ NEXTJU
13020 FORMC=0TO12
13030 POKESM+653+MC,C2 POKECM+653+MC,BL
13040 FORDE=1TO20 NEXTDE
13050 POKESM+653+MC,SP
13060 POKESC+4,0 POKESC+4,33
13070 POKESC+1,217 POKESC,199
13080 PRINT"HOLD ANY KEY DOWN"
13090 NEXTMC
13100 GETA$ IFA$=""THEN12130
13110 PRINT"J"
13120 GOTO80
13130 FORMC=0TO12
13140 POKESM+665-MC,C2 POKECM+665-MC,BL
13150 FORDE=1TO20 NEXTDE
13160 POKESM+665-MC,SP
13170 POKESC+4,0 POKESC+4,53
13180 POKESC+1,217 POKESC,199
13190 PRINT"HOLD ANY KEY DOWN"
13200 NEXTMC
13210 GETA$ IFA$=""THEN13020
13220 PRINT"J"
13230 GOTO80
20000 REM *** HI-RES CHARACTERS ***
20010 POKE52,56 POKE56,56 CLR
20020 POKE56334,PEEK(56334)AND254
20030 POKE1,PEEK(1)AND251
20040 FORI=0TO2047
20050 POKEI+14336,PEEK(53248+I)
20060 NEXTI
20070 POKE1,PEEK(1)OR4
20080 POKE56334,PEEK(56334)OR1
20090 READCN IFCN<0THEN50
20100 FORI=0TO7 READCD
20110 POKE14336+8*CN+I,CD NEXTI
20120 GOTO20090
20130 DATA64,126,60,126,126,126,60,126,60
20140 DATA65,126,42,0,0,0,0,42,126
20150 DATA66,102,60,90,153,255,60,102,195
20160 DATA67,36,36,60,126,219,255,60,195
20170 DATA68,80,40,80,184,136,102,255,102
20180 DATA69,129,219,126,106,86,126,219,129
20190 DATA70,0,102,126,60,52,126,102,0
20200 DATA71,36,0,60,86,60,24,0,66
20210 DATA72,0,0,24,60,24,0,0,0
20220 DATA73,0,66,102,54,0,102,99,193
20230 DATA74,24,60,24,50,50,24,24,56
20240 DATA75,24,60,217,62,24,50,60,192
20250 DATA76,12,30,252,60,28,12,12,28
20260 DATA-1
```





FREE
SOFTWARE FOR LIFE!
"Probably the best offer ever made to the micro user"
New Gold Star life membership of The Software Library is your key to a vast treasure trove of tapes costing up to £18 each. They are yours whenever you want them, three at a time... and a full week's rental won't ever cost you a penny in hire fees!
Only the original Software Library has the resources to make such an amazing offer—free software for life! Our ten megabyte computer ensures fast service, our illustrated, descriptive catalogue makes it fun to choose from over 80 top arcade games, 124 Adventures, simulations and other games, and over 120 great utilities and serious applications. 60% are for the Spectrum, the rest divided between Commodore 64 and ZX81. New releases are constantly being added.
Joining this money saving scheme should cost you £24, as an introductory offer you can join this month at half price— £12. From then on, you can take away three tapes from our shop whenever you wish, or if you order by post, all we ask is 30p post/packing per tape. The rental is perfectly free in either case.
What's more, you can sell your surplus software to other members (we have over 5,000!) and recoup the cost of membership in no time at all. We offer huge discounts on peripherals and tapes... and so much more. Phone us now on 0730 892738 quoting your Access number, or return the coupon without delay!
GUARANTEED to save you more than any other software library scheme!
SOFTWARE LIBRARY FARNHAM ROAD, LISS, HANTS GU33 6JU
Please send me at the introductory offer and send my membership right by return.
NAME
I enclose cheque/P.O. for £
ADDRESS
THE ORIGINAL SOFTWARE LIBRARY!

Rom for improvement

Yet another QL Rom. this time JS. Andy Pennell checks it out

As revealed first in *Popular* the latest QLs now being shipped have a new Rom, called JS. It has numerous improvements over the previous version, JM, which divided into two sections – Super Basic and QDOS.

Apart from a few minor bug fixes, the main addition has been in error handling. The command *When Error*, which used to give a not implemented report, now allows trapping of most of the errors caused from Basic. You place your error handler between the *When* statement and a terminating *End When* though be very careful – if you cause an error within your error handler, the QL will normally lock up! When your extra routine has finished, the QL goes back to what it was doing when the error stopped it, but as there is no *Resume* command there seems no way of saying where exactly you wish to return to. There are two functions *Ernum* and *Erlin* which return the line and error numbers respectively, and a command *Report* which prints the appropriate error message on any particular channel. There are also 20 extra functions which can be used in your error handler.

These extra functions, along with the other additions to SuperBasic, are shown in Table 1. The *Tra* command is not *Trace* as you may have read elsewhere but is a way of accessing RS232 translate tables of QDOS, explained later. The other extra feature is a general *When* command, that allows any action to be taken when an expression reaches a particular value, for example *When x<0.Print 'x is negative' End When* will cause the message to be printed whenever *x* becomes a negative value. The reason for the presence of the keyword *Becomes* in the very early Roms is now apparent.

Various bugs in SuperBasic have been fixed, including the notorious *Call* bug, though many have not. There is now an official bug-list available from Sinclair, detailing mainly Basic bugs, and which Roms they occur in.

Having dealt with SuperBasic, let's now have a look at the new, improved version of QDOS, which is version number 1.10 in JS. Microdrive handling has been generally tidied up, and quite a few bugs fixed, though again there are many that have remained. Most of the changes are internal to allow foreign language Roms to be easily created, by moving all the language dependent features to the top section of the Rom. The most useful feature is the *Translate* ability on the RS232 ports – it is now possible to convert any character into any other, or any sequence of up to three characters, so that some of the stranger foreign letters can be printed by translating into any necessary control codes.

The translation also works on incoming data, which seems less useful. To handle this, there is an additional manger trap in QDOS, which sets the translate table to be used, and also where the text for the system error messages are to be found. It is this trap which is accessible from the SuperBasic *TRA* command.

There are several new QDOS system variables in Ram, mainly for the translations, as well as eight extra ones for SuperBasic to keep track of the new *When* processing. Another vector has been added to the Rom, and points to another 'unofficial' SuperBasic entry point. The channel definition blocks for windows now have an extra parameter, that will allow windows to be created in memory, and not just on the screen, which could make a WIMP like environment easier to program.

QDOS bug fixes include the *MT Mode* trap, that no longer has the habit of setting some windows to black ink and black paper, and the "look for peripherals" routine now recognises more than one peripheral. Unfortunately it is too good, as it recognises anything in the Rom slot twice.

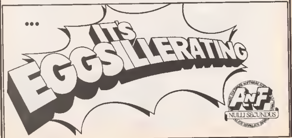
It has been a long time since the last QL Rom, and this is a little disappointing given the wait. Although Basic now has error handling, it would be nice if QDOS had been given default drive names and numbers.

Table 1. Extra SuperBASIC keywords

WHEN ERROR	error handling
WHEN <expression>	exception handling
REPORT <channel>	print current error message
TRA	set translate table and error messages
ERNUM	last error number
ERLIN	line of last error

ERR_NC ERR_NJ ERR_OM ERR_OR ERR_BO ERR_NO, ERR_NO, ERR_NF, ERR_EX ERR_IU, ERR_EF ERR_EF ERR_DF ERR_BN ERR_TE, ERR_FF ERR_BP ERR_FE, ERR_XP ERR_OV ERR_NI ERR_RO ERR_BL

all are functions returning 1 if ERNUM corresponds to the appropriate error



Index-linked

Part Three of the Tracer Project for the BBC B by
Calvin Woodings

If you have been following our series you will now have the first two parts of our superfast index creation and search program on disc and will be waiting (patiently?!) for the remaining part of the main program so that you can start creating your first index. Well here it is, and whilst it's not too long, it is complex, so type carefully. As before, avoid typing the Rems and the blank lines and keep unnecessary spaces down to a minimum. Remember to load the first part of the Tracer from last week before starting.

Program Notes

Line 440 *PROCrc* is the procedure which keeps track of the number of records in the index and hence the remaining space. The "*y*" in the print statement should not be taken literally: as before, it means enter the yellow teletext code by pressing *<Shift f3>*. *W%* is the total index length in bytes, so *W%DIV40* is the number of 40 byte records. *J%* is the total available memory.

Line 450 – If *W%* became equal to *J%* at Line 440 the index would be full, and this line tells you about it. The "*f*" stands for the teletext flash character obtained by entering *<Shift f8>*. **FX229,0* resets normal escape action (if you filled the index whilst in 'EDIT' mode, the escape key would be disabled).

Line 480 – starts the Add Records procedure. It makes sure an index name is present, checks that the index isn't full, sets up the screen heading, sets the line pointer to 6, and *D%* to the last byte in the index (see also Line 180). The repeat loop only ends when the index is full.

Line 490 – prints the last line in the index immediately under the index header to remind you what you typed in last. If *W%*=0, the index is empty so it doesn't bother.

Line 500 – prints the index heading, prints the record check, positions the cursor on line *L%*, clears the string buffer at *P%* and uses a *For Next* loop to get in each field. *(Himem-47)* is the address where the number of fields in each record was stored by the New Index routine. *(Himem+39+N%)* is the address where the length of field *N%* is stored, and this is used to control the number of characters taken in by the input routine *FNin* (*$S%=$S%+ etc*) pads out each field with spaces to the field length, and terminates it with a teletext colour code which sets up the colour of the next field. Finally, the fields are added to *$P%*, the cursor is moved across the screen to the correct position for the next field, and the teletext colour code is echoed on the screen.

Line 510 – starts by loading the record onto the end of the index in memory. The screen line pointer and the total record count is increased by one, and the inner loop is terminated if the record was printed on the 18th (last) screen line or if the last record filled the index.

Line 520 – commences the *Display* routine by setting up the screen as usual, and checking to see if there is an index present. *N%* is loaded with the address of the start of the last record in the index, and *L%* with the screen line on which the display should start. In case you are wondering, the display runs backwards so that the last record entered is the first to be displayed, and the rather complicated formula for L% calculates where the last line should be printed on the screen. This is to allow the first line of the index, which may be printed several pages later, to appear at the top of the last screen.

Line 530 – contains a pair of loops which control the printing out to the screen and provide access to the edit routine. *T%* and *F%* are temporary stores for *L%* and *N%* in case the same screen has to be redisplayed after editing. The inner loop prints out a screen full of records and sets *D%* to the address of the first screen character in case the editor is called. The outer loop terminates when *N%* has been reduced to the index start address and all the records have been printed.

Line 540 – The edit procedure is called every time a screen is displayed, and *A%* is the variable which collects any keys pressed. If the last key in was either *Ctrl I* (ASCII 9) or *Ctrl D* (ASCII 4) then a line has been added or removed, and the screen must be redisplayed with the cursor in the same position as when the last key-in was made. Otherwise, the edit-cursor is set to Line 8 (*C%*=8) and the option to edit printed up. If the option is declined, the display-cursor (*L%*) is set for line 16. *N%* reloaded from *F%* (see Line 530), and the display routine re-entered.

Line 550 – updates the record count displayed at the foot of the screen, and prints up some helpful hints. Remember, the unexpected "*g*" and "*y*" refer to the teletext colour codes. **FX4,1* makes the cursor keys return ASCII codes so that the edit routine can use them.

Line 560 – disables the escape key.

Line 570 – creates a solid white cursor, sets its horizontal position (*H%*) to 0, positions it on the screen at *V%*,*C%*, and waits for a key-in.

Line 580 – alters the cursor position variables according to which cursor key is pressed and makes sure you are able to move it out of the display area, (139 is up, 138 is down, 137 is right, and 136 is left.)

Line 590 – *C%* points to the address in the index Ram which corresponds to the character at the cursor on the screen. *A%* is 4 if *Ctrl D* was pressed and if there is something to delete (*W%>0*), the loop takes a record out of Ram and moves all the records below it up 40 bytes. The record count (*W%*) is reduced and a return character (*&D*) marks the new end of the index.

Line 600 – inserts 40 empty bytes into the correct position in index Ram when *Ctrl I* is pressed, and there is room in Ram for the new record. The logic is analagous to that of Line 590, with the complication that the colour codes which act as field delimiters are insert-

```
10   REM TRACER: A SUPERFAST INDEX CREATION AND SEARCH PROGRAM
20   REM BY C.R.WOODINGS (C)1985
30
40   REM MAIN PROGRAM LAST PART
50
60   REM*****************************************************
65
56   REM The 'y' in Lines 440,550,840 are yellow Teletext codes <SHIFT F3>
57   REM The 'f' in Line 450 is the flashing Teletext code <SHIFT F8>
58   REM The 'g' in Line 550 is the green Teletext code <SHIFT F2>
435
440 DEFPROCrc PROCpr(23,"y"+STR$(W%DIV40)+" Records in Index: "+STR$((J%-W%)DIV40)+" Spaces Left"):IF J%>W% ENDPROC
450 PROCpr(20,"fINDEX FULL! "):PROCco(21):*FX229,0
460 ENDPROC
465
480 DEFPROCad PROCfn:IF W%<J% REPEAT:PROCt("Adding to "+$F%+" Index"):L%=6:D%=HIMEM+48+W% ELSE PROCrc:ENDPROC
490 IF W%>0 PRINTTAB(0,5)$(D%-I%);
500 REPEAT:PROCh:PROCrc:VDU31,0,L%:$P%="":FOR N%=1 TO?(HIMEM+47):$S%=FNin(?(HIMEM+39+N%),31,97):$S%=$S%+STRING$(?(HIMEM+39+N%)-LEN$S%," ")+CHR$(128+N%):$P%=$P%+$S%:VDU31,LEN$P%-1,L%,128+N%:NEXT
510 $P%=LEFT$($P%,39):$(W%+HIMEM+48)=$P%:L%=L%+1:W%=W%+I%:UNTIL L%>18 OR W%>=J%:L%=L%-1:UNTIL W%>=J%:PROCrc:ENDPROC
515
```

ed automatically to prevent silly mistakes on keying in records. This is what the expression $G\%?(?(Himem+39+M\%))=128+M\%$ does.

Line 610 – If the key-in was a printable ASCII code, and the cursor was not in the last column of the display area ($B\%=39$ is only accessible to the delete key ASCII 127) and furthermore, if the cursor is not position over one of the field delimiters, ($?(G\%+B\%)$ would be > 127 when this happens) then the key in is printed on the screen, and added to the index in Ram.

Line 620 – If the key-in was *<Delete>*, and you're not trying to delete a field delimiter, then this line deletes a character from the screen and inserts a space (*&20*) in Ram.

Line 630 – Leaves the edit routine when *<Return>* *<Ctrl I>* or *<Ctrl D>* is pressed the cursor keys are reset to normal function.

Line 640 – Returns to a normal size cursor clears the help messages, gives the *Escape* prompt and resets *Escape* to normal function.

Now, save the whole program as *Tracer* on the same disc as the new index routine *New*, and make a backup straight away before you run it.

Finally **Build* the *!Boot* program as listed at the end of the main program and having transferred it to disc by pressing *Escape* in the usual way, type in **OPT4,3<Return>* so that it runs on *<Shift-Break>* (See your DFS manual if in any doubt about this)

Now try it! If there were no mistakes in typing you can start your first index right away.

Next week we'll give some general hints on using the program and provide a machine code print routine so that you can dump your searches to printers.

A 40 track disc with the complete set of Tracer programs is available for £12 (inclusive) from the author at 12 Copsewood Ave, Nuneaton, Warwicks CV11 4TQ

```
  520 DEFPROCd1 PROCfn:PROCt("Display/Edit "+$f%+" Index"):IF W%=0 PROCpr(12,"IN
DEX EMPTY"):PROCco(21):ENDPROC ELSE PROCh:N%=HIMEM+40+W%-I%:L%=(W%-I%)MOD520/I%+
6
  530 REPEAT:T%=L%:F%=N%:REPEAT:PRINTTAB(0,T%)$F%:T%=T%-1:F%=F%-I%:UNTIL T%<6:D%
=F%-(T%-D)*I%:PROCedit:UNTIL N%<HIMEM+40:N%=N%+1%:ENDPROC
  535
  540 DEFPROCedit:IF (A%<>0 AND A%<>4) C%=6:IF NOT FNyn(20,"Edit Page")L%=10:N%=
F%:ENDPROC
  550 PROCrc:PROCpr(20,"gUse cursor keys: <RETURN> to finish"):PROCpr(21,"yCTRL-
D deletes record: CTRL-I inserts"):*FX4,1
  560 *FX229,1
  570 VDU23,0,10,96,0,0,0;0;:B%=0:REPEAT:VDU31,B%,C%:A%=GET:*FX15,1
  580 IF (A%=139 AND C%>6) C%=C%-1 ELSE IF (A%=138 AND C%<18) C%=C%+1 ELSE IF(A%
=136 AND B%>0) B%=B%-1 ELSE IF (A%=137 AND B%<38) B%=B%+1
  585
  590 G%=D%+I%*(C%-6):IF (A%=4 AND W%>0)FOR M%=0 TO (W%+HIMEM+40-G%-I%) STEPI%:$
(G%+M%)=$(G%+M%+I%):NEXT:W%=W%-I%:?(HIMEM+W%+40)=&D
  595
  600 IF (A%=9 AND J%>W%) FOR M%=(W%+HIMEM+40-G%)TO 0 STEP-I%:$(G%+M%+I%)=$(G%+M
%):NEXT:$(G%+M%+1%)=STRING$(39," "):FOR M%=1 TO (?(HIMEM+47)-1):G%?(?(HIMEM+39+M
%))=128+M%:D%=G%+?(HIMEM+39+M%)+1:NEXT:W%=W%+1%:GOTO630
  605
  610 IF A%>30 AND A%<127 AND B%<39 IF ?(G%+B%)<127 G%=G%+B%:PRINTCHR$A%;:?G%=A%
:IF B%<38 B%=B%+1
  615
  620 IF A%=127 IF ?(G%+B%-1)<127 B%=B%-1:PRINTCHR$A%:G%=D%+B%:?G%=&20:IF B%<0 B
%=0
  630 UNTIL A%=13 OR A%=4 OR A%=9:PROCt("Display/Edit"):PROCh:*FX4,0
  640 VDU23,0,10,114,0,0,0,0;:PRINTTAB(0,20)SPC79:PROCpr(21,"y<ESC> for Menu"):*
FX229,0
  650 ENDPROC
```

```
0  REM !BOOT LISTING
1 ?&CA0=&D
2 *KEY0CLS:PAGE=&1100|MLO."TRACER"|M.RUN|M
3 *FX138,0,128
```



RAM
MAKE MORE
OF YOUR
SPECTRUM...
JOYSTICK
INTERFACE MK II
£9·95
£21·95
SPECTRUM
UPGRADE KIT
...FOR LESS.
Please send me
Spectrum Joystick Mk.II Interface(s) at £9 95
Quickshot II rapid fire joystick(s) at £9 95
(only when purchased with interface. Normally £12 95)
Spectrum Upgrade Kit(s) at £21 95
Please state issue 2 [ ] or 3 [ ]
Expiry date
Name
Address
Postcode
Telephone

MOVEMEAD DISCOUNT
SOFTWARE COMPANY

Spectrum	RRP	Our Price	Commodore 64	RRP	Our Price
Raid over Moscow	7.95	5.95	Ghostbusters	10.95	8.30
Bruce Lee	7.95	5.95	Beachhead	9.95	7.59
Project Future	6.95	5.45	Bruce Lee	9.95	8.45
Everyone's a Wally	9.95	7.45	Summer Games	14.95	10.30
Daley Thompson	6.90	4.90	Raid over Moscow	9.95	7.95
Knight Lore	9.95	7.20	Staff of Karnath	9.95	8.95
Underwurlde	9.95	7.20	Tapper	9.95	7.95
Lords of Midnight	9.95	7.95	Bristles	9.95	3.99
Doomdark Revenge	9.95	8.95	Spy vs Spy	9.95	7.95
Psytron	7.95	5.90	Bou der Dash	8.95	6.45
Valhalla	14.95	3.99	Hobbit	14.95	7.99
Blockbusters	7.95	5.75	Daley Thompson Decath	7.90	5.25
Jet Set Willy	5.95	4.49	Fighter Pilot	8.95	7.50
Tir Na Nog	9.95	8.95	Breakfever	7.00	5.49
Air Wolf	6.95	5.45	Flip & Flop	8.95	3.99
Monty Is Innocent	6.95	4.99	Spy Hunter	9.95	7.50
Great Space Race	14.99	3.99	Impossible Mission	8.95	7.45
Match Point	7.95	4.99	Astro Chase	9.95	3.99
Gift of the Gods	9.95	7.95	Congo-Bongo	9.95	7.95
Tripods	11.50	8.99	Kong Strikes Back	7.90	5.45
Alien 8	9.95	7.95	Up and Down	9.95	7.95
Ghostbusters	9.95	7.45	Havoc	9.95	4.99
Software Star	6.95	5.95	Chinese Juggler	6.90	2.99
Technician Ted	5.95	4.75	Indiana Jones	9.95	7.95
			Raid Over Moscow	9.95	7.95

All prices include VAT. Postage and packing is FREE on orders in excess of £15 00. All orders of less than this amount are cahrged 0 75p towards the cost. 1 000's of more titles available for all machines. Send a S A E for full list. Send your cheque/P O for the full amount (plus postage if required) to —
MOVEMEAD (MARKETING) LIMITED
55 ALESBURY STREET
BLETCHLEY BUCKS MK2 2BH Dept PCW
Telephone (0908) 79232/3
Order despatched within 3 days of receipt of your order and cheque/PO. All tapes are offered subject to availability. E&OE

The Adventurers Club Ltd.
64c Menelik Road, London NW2 3RH
Telephone: 01-794 1261
£10,000 PRIZES ON OFFER
SPECIAL INTRODUCTORY OFFER
THE SEARCH IS ON!
FOR THE
MASTER ADVENTURER 1985
WE OFFER:
★ The Master Adventurer Trophy Competition
★ Monthly Member's Dossier with reviews, maps, tips solutions new releases etc
★ Unlimited help through our phone-in helpline
★ Discounted software
★ Members own games marketed for royalties
★ AND MANY OTHER SERVICES
SPECIAL INTRODUCTORY OFFER
£10.95 £9.95
Please complete coupon or give us a ring for our FREE leaflet or any other information
Name
Address
I apply for membership of the Adventurers Club – I enclose a cheque/postal order for £9 95
The Adventurers Club Ltd. run by Professionals for ALL the Adventurers!

Memory check

Ever wondered how lines of Basic were stored in memory?
H Hipple explains.

If you would like to know what happens to a program listing after it has been entered into memory, and would also appreciate a better presentation of a listing when checking it line by line, then this listing aid should help you. The information on which the program is based is contained in Chapter 24 of the Spectrum Manual (page 122).

The facilities provided are (a) Stepping mode, (b) Block listing mode and (c) Address listing.

The *Stepping Mode* provides a means of stepping through a program from a chosen line, showing the line address and number of bytes in the line, and jumping forwards or backwards to other lines.

The *Block Listing Mode* allows a block of lines to be listed either to screen or to a printer, with line addresses and line byte usage.

Finally, *Address Listing* allows a complete listing, without text and to either screen or to a printer, of all the line addresses and line bytes, and of the total bytes used. This total will include those used by the listing program (1489 bytes).

The listing program uses Lines 9950 to 9987 and should be *Merged* in with the main program to be listed, and is accessed by entering *GO TO 9950*. A prompt is then given *'step'* or *'block'*, giving a choice of *Step* or *Block* modes.

In *Step* mode you are asked for the start line for stepping through. If you want the first line, an entry of "*O*" will suffice. when the line has been listed, the prompt is *Quit, Jump* or *Step* (any key other than 'j' or 'q' will Step On).

In *Block* mode there is a choice of using screen or printer, and then the first and last lines of the block are entered. After quitting *Step* mode and at the end of a Block listing there is a choice of stopping or either screening or printing a list of line addresses and bytes.

The program works by starting at the address vectored by the systems variable *Prog*, from *Peek* 23635+256**Peek* 23636. It then takes the first two bytes and converts them to the line number by *Peek* (byte 2) +256**Peek* (byte 3)+256**Peek* (byte 4)) give the number of text bytes A/US one for Enter the total line bytes is this value A/US four. Using this information, the program can step to the next line address, and also identify the limits of the line text, for screening.

As the line search always starts at the beginning of the *Prog* area, the delay in screening the first line depends on how far into the program it lies. Any attempt to list past Line 9998 will be blocked by Line 9965, as listing past this goes into the 'unknown territory' of the top end of Ram.

In order to reduce to a minimum the bytes taken by the listing program, use has been made of assigning variables to the values zero, one and two and using the variables instead, and, for example, using *GOTO Val "9987"* instead of *GOTO 9987*, as this saves three bytes each time, (as the number is stored as a string variable instead of as a floating point number). The result of this has been to reduce a 1800 byte program down to less than 1500 bytes.

```
9950  REM stepread by H Hipple
9951 LET o=VAL "0": LET i=VAL "1": LET u=VAL "2": LET v=VAL "9986": LET ll=VAL "
9974": LET k=VAL "256": DEF FN a(z)=PEEK (z+i)+k*PEEK z: DEF FN b(z)=PEEK z+k*PE
EK (z+i): DEF FN c(z)=FN b(z+u)+VAL "4"
9952 LET pg=FN b(VAL "23635"): CLS : PRINT £1;"STEP READ": PAUSE VAL "50"
9953 LET a=pg: GO SUB ll: CLS
9954 LET ch=o: PRINT £1; FLASH i;"step or block?": PAUSE o: IF INKEY$="b" THEN
LET ch=i
9955 IF ch=o THEN  INPUT "Start Line? ";st: LET nd=st: GO TO VAL "9959"
9956 GO SUB v
9957 INPUT "Start Line? ";st: IF st<ln THEN  LET st=ln
9958 INPUT "End Line? ";nd: IF nd<st THEN  PRINT "Entry error": PAUSE VAL "50":
CLS : GO TO VAL "9957"
9959 IF ch=o AND st<ln THEN  LET st=ln
9960 PRINT  FLASH i;"SEARCHING": GO SUB ll
9961 IF st<ln THEN  LET a=pg: GO SUB ll: GO TO VAL "9961"
9962 IF st>ln THEN  LET a=nx: GO SUB ll: GO TO VAL "9962"
9963 CLS
9964 IF ch=i AND ln>=nd+VAL "1" THEN  GO TO VAL "9977"
9965 IF ln>VAL "9999" THEN  PRINT '''"Program end": STOP
9966 IF ch=i THEN  PRINT : PRINT
9967 IF ch=o THEN  CLS : CLOSE £u: PRINT AT VAL "4",o;
9968 LET ao=a: PRINT  INK i;"Address ";ao;'' INK u;ln;: LET a=a+VAL "4"
9969 IF PEEK a=VAL "14" THEN  LET a=a+VAL "6"
9970 IF PEEK a=VAL "13" THEN  GO TO VAL "9972"
9971 PRINT ;CHR$ PEEK a;
9972 LET a=a+i: IF a>=nx THEN  PRINT  INK i;''';FN c(ao);" bytes": LET a=nx: GO T
O VAL "9975"
9973 GO TO VAL "9969"
9974 LET ln=FN a(a): LET nx=a+FN c(a): RETURN
9975 IF ch=i THEN  GO SUB ll: GO TO VAL "9964"
9976 PRINT £1;"quit listing, jump or step on": PAUSE o: IF INKEY$<>"q" AND INKEY
$<>"j" THEN  GO SUB ll: GO TO VAL "9964"
9977 IF INKEY$="j" THEN  INPUT "New Line? ";st: GO TO VAL "9961"
9978 CLOSE £u: CLS : PRINT £1;"List addresses y/n ?": PAUSE o: IF INKEY$="n" THE
N  GO TO VAL "9984"
9979 IF INKEY$="r" THEN  GO TO VAL "9950"
9980 GO SUB v
9981 CLS : LET a=pg: LET sa=o: LET no=FN c(a): PRINT "LINE";TAB VAL "7";"ADDRESS
";TAB VAL "16";"BYTES"''FN a(a);TAB VAL "7";a;TAB VAL "16";no: LET a=a+no: LET
sa=sa+no
9982 IF PEEK (a-i)=VAL "13" AND FN a(a)>VAL "9999" THEN  PRINT "Total Bytes ";sa
: GO TO VAL "9984"
9983 IF PEEK (a-i)=VAL "13" THEN  LET no=FN c(a): PRINT FN a(a);TAB VAL "7";a;TA
B VAL "16";no: LET a=a+no: LET sa=sa+no: GO TO VAL "9982"
9984 CLOSE £u: PRINT £1;"stop or rerun? ": PAUSE o: CLS : IF INKEY$="s" THEN  ST
OP
9985 GO TO VAL "9950"
9986 CLS : PRINT £1;"Hard Copy y/n?": PAUSE o: IF INKEY$="y" THEN  OPEN £u,"p"
9987 RETURN
```

At your command

Part 2 of a machine code monitor by Brien Cadge

The monitor itself is written as a collection of subroutines, to do things like encode and decode a set of hex characters to and from their binary value. Any of the general routines could easily be incorporated into your own programs. The breakpoint facility is provided by using the *RST 30* instruction, which is the only *RST* which the operating system doesn't use. Many Rom calls are made throughout the program to print characters, change modes, access the cassette, read the keyboard, etc. These are all fully explained in the Amsoft firmware manual.

It is very simple to add new commands of your own to the monitor software. The command name table currently ends in Line 2890 of the assembly language listing. To add a new command, insert the command word, followed by a zero byte. The value 255 is used to signal the end of the word list. The start address of the command routine must be added to the addresses in Lines 2900 to 2920. All command subroutines end with a *JP LOOP* instruction, to return to the command prompt.

Do not use the *RET* as this will return to Basic. The *HELP* command will automatically include any new commands in its list.

The assembly language listing should be quite easily understood by anyone who writes Z80 code. However, it isn't necessary to understand it to use the program.

```
1230          LD    BC,22
1240          OR    A
1250          SBC   HL,BC
1260          LD    (BYTLT),HL
1270          POP   HL
1280          JR    SCLP
1290 CLSOT    CALL  #BC8F
1300          JR    NC,ERROR1
1310          RET
1320 OVALN    LD    A,22
1330 UNDLN    CALL  LNPRT
1340          CALL  DATC0
1350          LD    A,0
1360          LD    (ESCP),A
1370 HXCL:    LD    A,(HL)
1380          CALL  HEXST
1390          LD    A,(HXHI)
1400          CALL  CASO
1410          LD    A,(HXLW)
1420          CALL  CASO
1430          INC   HL
1440          LD    A,0
1450          CP    1
1460          JR    NZ,COMA
1470          LD    A,13
1480          JR    OTCH
1490 COMA:    LD    A,40
1500 OTCH:    CALL  CASO
1510          DJNZ  HXCL
1520          CALL  LNINC
1530          RET
1540 CASO:    CALL  #BC95
1550          RET   C
1560          LD    A,255
1570          LD    (ESCP),A
1580          RET
1590 ERROR1:  CALL  #BC92
1600          LD    HL,ESCMS
1610          CALL  MESPT
1620          RET
1630 ESCMS:   DEFB  13,10,24
1640          DEFM  'ESCAPE!'
1650          DEFB  24,7,13,10,10,0
1660 MESPT:   LD    A,(HL)
1670          OR    A
1680          RET   Z
1690          CALL  #BB5A
1700          INC   HL
1710          JR    MESPT
1720 KBDIN:   CALL  #BB78
1730          CALL  #BB81
1740          LD    HL,TXBUF
1750          LD    B,0
1760 WTKY:    CALL  #BB06
1770          CP    127
1780          JR    Z,DEL
1790          CP    #FC
1800          JR    Z,KYESC
1810 PATCH:   CALL  #BB5A
1820          CP    13
1830          JR    Z,KYEOF
1840          LD    (HL),A
1850          INC   HL
1860          INC   B
1870          JR    WTKY
1880 DEL      LD    A,B
1890          OR    A
1900          JR    Z,WTKY
1910          LD    A,8
1920          CALL  #BB5A
1930          LD    A,16
1940          CALL  #BB5A
1950          DEC   B
1960          DEC   HL
1970          JR    WTKY
1980 KYEOF:   LD    A,0
1990          LD    (HL),A
2000          LD    A,10
2010          CALL  #BB5A
2020          CALL  #BB84
2030          RET
2040 KYESC:   LD    A,42
2050          LD    (HL),A
2060          INC   HL
2070          LD    A,13
2080          JR    PATCH
2090 HXTOD4:  CP    "A"
2100          JR    C,CHDIG
2110          SUB   55
2120          RET
2130 CHDIG:   SUB   48
2140          RET
2150 HXTOD8   LD    A,(IX+0)
2160          CALL  HXTOD4
2170          SLA   A
2180          SLA   A
2190          SLA   A
2200          SLA   A
2210          LD    B,A
2220          LD    A,(IX+1)
2230          CALL  HXTOD4
2240          OR    B
2250          RET
2260 HXTOD6   LD    IX,TXBUF
2270          CALL  HXTOD8
2280          LD    H,A
2290          INC   IX
2300          INC   IX
2310          CALL  HXTOD8
2320          LD    L,A
2330          RET
2340 DECOD:   LD    DE,CMDE
2350          LD    IX,DEADS
2360 CMLP:    LD    HL,TXBUF
2370 CKLP:    LD    A,(DE)
2380          CP    (HL)
2390          JR    Z,SAGO
2400 NXC      LD    A,(DE)
2410          CP    255
2420          JR    Z,EDFCM
2430          INC   DE
2440          OR    A
2450          JR    NZ,NXC
2460          INC   IX
2470          INC   IX
2480          JR    CMLP
2490 SAGO:    OR    A
2500          JR    Z,GOTIT
2510          INC   DE
2520          INC   HL
2530          JR    CKLP
2540 EDFCM:   LD    HL,UNKCM
2550          RET
2560 GOTIT:   LD    L,(IX+0)
2570          LD    H,(IX+1)
2580          RET
2590 CMDE:    DEFM  'BYE
2600          DEFB  0
2610          DEFM  'WRITE"
2620          DEFB  0
2630          DEFM  'LIST'
2640          DEFB  0
2650          DEFM  "START
2660          DEFB  0
2670          DEFM  "STOP"
2680          DEFB  0
2690          DEFM  "READ"
2700          DEFB  0
2710          DEFM  "FAST
2720          DEFB  0
2730          DEFM  "SLOW
2740          DEFB  0
2750          DEFM  "WIDTH"
2760          DEFB  0
2770          DEFM  "HELP"
2780          DEFB  0
2790          DEFM  "INPUT"
2800          DEFB  0
2810          DEFM  "REGS"
2820          DEFB  0
2830          DEFM  'CALL"
2840          DEFB  0
2850          DEFM  "BREAK"
2860          DEFB  0
2870          DEFM  "JUMP"
2880          DEFB  0
2890          DEFB  255,255
2900 DEADS:   DEFW  BASIC,DATA,LIST,
              MOTON,MOTOFF,CREAD,FAST
2910          DEFW  SLOW,WIDTH,HELP,EN
              TER,REGDP,CALL
2920          DEFW  BREAK,JUMP
2930 ASKST    LD    HL,STMES
2940          CALL  MESPT
2950          CALL  KBDIN
2960          CALL  HXTOD6
2970          LD    (STADRS),HL
2980          RET
2990 ASKLEN:  LD    HL,LNMES
3000          CALL  MESPT
3010          CALL  KBDIN
3020          CALL  HXTOD6
3030          LD    (LENCOD),HL
3040          RET
3050 STMES    DEFM  'Start address: 0'
3060          DEFB  0
3070 LNMES    DEFM  "Length: 0"
3080          DEFB  0
3090 UNKCM    LD    HL,UKMES
3100          CALL  MESPT
3110          JP    LOOP
3120 UKMES    DEFM  "What?"
3130          DEFB  7,13,10,0
3140
3150 BASIC:   LD    HL,RTMES
3160          CALL  MESPT
3170          RET
3180 RTMES:   DEFM  "End of Monitor...
3190          DEFB  13,10,0
3200
3210 DATA:    CALL  ASKST
3220          CALL  ASKLEN
3230          LD    HL,CKMES
3240          CALL  MESPT
3250          LD    HL,(STADRS)
3260          CALL  HXPRS
3270          LD    HL,CKMES2
3280          CALL  MESPT
3290          LD    HL,(LENCOD)
3300          CALL  HXPRS
3310          LD    HL,CKMES3
3320          CALL  MESPT
3330          CALL  KBDIN
```

```
        LD   A,(TXBUF)
        OR   32
        CP   "y"
        JR   Z,CVCK
        JP   LOOP
CVCK:   LD   HL,(STADRS)
        LD   (DADRS),HL
        LD   HL,(LENCOD)
        LD   (BYTLT),HL
        CALL #A83V
        JP   LOOP
CKMES:  DEFM "DATA-100 from @"
        DEFB 0
CKMES2: DEFM " for @"
        DEFB 0
CKMES3: DEFB 13,10
        DEFM "Is this correct (Y/N)? "
        DEFB 0
MOTON:  CALL #BC6E
        JP   LOOP
MOTOFF: CALL #BC71
        JP   LOOP
FAST    LD   HL,167
        LD   A,50
STSP:   CALL #BC68
        JP   LOOP
SLOW:   LD   HL,333
        LD   A,25
        JR   STSP
CREAD:  LD   B,0
        LD   DE,BUPER
        CALL #BC77
        JR   C,NOERR1
        CALL ERROR1
        JP   LOOP
NOERR1  LD   (DADRS),HL
        LD   IX,(DADRS)
        PUSH AF
        LD   HL,TYPMS
        CALL MESPT
        POP  AF
        AND  15
        ADD  A,#24
        CALL #BB5A
        LD   HL,SRTMS
        CALL MESPT
        LD   H,(IX+22)
        LD   L,(IX+21)
        CALL HXPRS
        LD   HL,LENMS
        CALL MESPT
        LD   H,(IX+25)
        LD   L,(IX+24)
        CALL HXPRS
        LD   HL,ENTMS
        CALL MESPT
        LD   L,(IX+26)
        LD   H,(IX+27)
        CALL HXPRS
        LD   HL,OKMS
        CALL MESPT
        CALL #BC7D
        JP   LOOP
TYPMS:  DEFB 13,10,10
        DEFM "File type "
        DEFB 0
SRTMS:  DEFB 13,10
        DEFM "Start Adrs @"
        DEFB 0
LENMS:  DEFB 13,10
        DEFM "Length     @"
        DEFB 0
ENTMS:  DEFB 13,10
        DEFM "Entry Adrs @"
        DEFB 0
OKMS    DEFB 13,10
        DEFM "OK"
        DEFB 13,10,0
WIDTH   CALL #BC11
        JR   Z,GO80
        LD   A,1
STMOD   CALL #BC0E
        JP   LOOP
GO80:   LD   A,2
        JR   STMOD
LIST:   CALL ASKST
        LD   HL,RMORM
        CALL MESPT
        CALL KBDIN
        LD   A,(TXBUF)
        CP   "1"
        JR   NZ,LRAM
        LD   A,0
        LD   (ROMST),A
        JR   GLIST
LRAM    LD   A,255
        LD   (ROMST),A
GLIST:  CALL #BC11
        LD   (MODE),A
GLOP:   CALL #BB6C
        LD   B,24
GLNP1:  LD   HL,(STADRS)
        CALL HXPRS
        LD   A,32
        CALL #BB5A
        CALL #BB5A
        PUSH BC
        LD   B,11
        LD   A,(MODE)
        CP   1
        JR   Z,LNL11
        LD   B,24
LNL11:  LD   A,(ROMST)
        OR   A
        JR   NZ,ALLRM
        CALL #B906
        PUSH AF
        CALL #B900
GETBY:  PUSH AF
        LD   A,(HL)
        LD   (BYTE),A
        POP  AF
        CALL #B90C
        POP  AF
        CALL #B90C
        JR   GOTBY
ALLRM:  CALL #B900
        PUSH AF
        CALL #B903
        JR   GETBY
GOTBY:  LD   A,(BYTE)
        CALL HEXPR
        INC  HL
        LD   (STADRS),HL
        LD   A,32
        CALL #BB5A
        DJNZ LNL11
        CALL LFEED
        POP  BC
        DJNZ GLNP1
        CALL #BB06
        CP   #FC
        JR   NZ,GLOP
        JP   LOOP
RMORM:  DEFM "List ROM (1) or RAM (2) ?"
        DEFB 0
HELP:   LD   HL,CMDS
        CALL LFEED
HLPL:   LD   A,(HL)
        CP   255
        JR   Z,EOCMD
        CALL MESPT
        INC  HL
        CALL LFEED
        JR   HLPL
EOCMD:  CALL LFEED
        JP   LOOP
ENTER:  CALL ASKST
        LD   HL,ENISM
        CALL MESPT
INPLP:  LD   HL,(STADRS)
        CALL HXPRS
        LD   HL,IEQMS
        CALL MESPT
        CALL KBDIN
        LD   A,(TXBUF)
        CP   "&"
        JR   Z,INPFN
        LD   IX,TXBUF
        CALL HXTOD8
        LD   HL,(STADRS)
        LD   (HL),A
        INC  HL
        LD   (STADRS),HL
        JR   INPLP
INPFN:  JP   LOOP
ENISM   DEFM "Hit ESC to finish"
        DEFB 13,10,0
IEQMS:  DEFM " = @"
        DEFB 0
REGDP:  LD   B,7
        LD   HL,RGMSS
        LD   IX,REGVL
RGLP:   CALL MESPT
        INC  HL
        PUSH HL
        LD   H,(IX+1)
        LD   L,(IX+0)
        CALL HXPRS
        POP  HL
        INC  IX
        INC  IX
        CALL LFEED
        DJNZ RGLP
        JP   LOOP
SAVRG:  LD   (REGVL+12),SP
        LD   (REGVL+2),BC
        LD   (REGVL+4),DE
        LD   (REGVL+6),HL
        LD   (REGVL+8),IX
        LD   (REGVL+10),IY
        PUSH AF
        POP  HL
        LD   (REGVL),HL
        LD   HL,(REGVL+12)
        INC  HL
        INC  HL
        LD   (REGVL+12),HL
        RET
CALL:   CALL ASKST
        LD   A,(TXBUF)
        CP   42
        JP   Z,ABORT
        CALL GOSB
        CALL SAVRG
ABORT:  JP   LOOP
GOSB    LD   HL,(STADRS)
        JP   (HL)
        RET
BREAK:  LD   HL,BRKMS
        CALL MESPT
        CALL KBDIN
        CALL HXTOD8
        LD   A,(HL)
        LD   (BRKBY),A
        LD   A,#F7
        LD   (HL),A
        LD   (BRKADR),HL
        JP   LOOP
RESTR:  CALL SAVRG
        POP  HL
        LD   HL,(BRKADR)
        LD   A,(BRKBY)
        LD   (HL),A
        LD   HL,RESMS
        CALL MESPT
        JP   REGDP
BRKMS:  DEFM "At Adrs @"
        DEFB 0
RESMS   DEFB 7,13,10,10,24
        DEFM "*BREAKPOINT*"
        DEFB 24,10,10,13,0
JUMP:   CALL ASKST
        LD   A,(TXBUF)
        CP   "*"
        JR   NZ,NOAB
        JP   LOOP
NOAB:   LD   HL,(STADRS)
        JP   (HL)
LOOP:   LD   A,">"
        CALL #BB5A
        CALL KBDIN
        LD   A,(TXBUF)
        OR   A
        JR   Z,LOOP
        CALL DECOD
        JP   (HL)
RGMSS:  DEFM "AF "
        DEFB 0
        DEFM "BC "
        DEFB 0
        DEFM "DE "
        DEFB 0
        DEFM "HL "
        DEFB 0
        DEFM "IX "
        DEFB 0
        DEFM "IY "
        DEFB 0
        DEFM "SP "
        DEFB 0
FNAME:  DEFM "MON-DATA"
TADAT:  DEFM " DATA "
LINE:   DEFS 4
HXHI:   DEFB 0
HXLW:   DEFB 0
BUFER:  DEFS 2048
BYTLT:  DEFW 10
DADRS:  DEFW 0
TXBUF:  DEFS 80
STADRS: DEFW 0
LENCOD: DEFW 0
ESCP:   DEFB 0
ROMST:  DEFB 0
MODE:   DEFB 1
BYTE:   DEFB 0
REGVL:  DEFS 14
BRKADR: DEFW 30000
BRKBY:  DEFB 0
```

Open Forum

We are always actively seeking programs for publication – either for Open Forum, the machine pages or *Star Game*. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation – usually not more than 1000 words – should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates according to the length and nature of the program and the quality of the accompanying documentation.

One Liner

on QL

The one-liner is an excellent way for you to get to know your Sinclair QL and develop a meaningful relationship in only seconds of typing. The ten one-liners enclosed utilise the *Circle* command and all are single loops.

Before trying them out type *Window 512,256,0,0 Mode 0 Paper 0*

This sets the output window so it takes up the whole screen and sets high-resolution mode. Then just type one of the following lines and a full screen pattern will be created.

If you change some of the parameters of the circle command in any of the one-liners you can create totally new patterns.

```
CLS:FOR I=1 TO 130:CIRCLE 75,50,I,I/14,I/15:NEXT I
CLS:FOR I=0 TO 150:INK I&&7:CIRCLE 75,50,I/2,1.5,0:NEXT I
CLS:FOR I=0 TO 314:CIRCLE SIN(I/25)*60+74,COS(I/50)*30+50,10:NEXTI
CLS:FOR I=0 TO 62:CIRCLE I*1.8+15,SIN(I/10)*30+50,10,2,COS(I/10)*2:NEXT I
CLS:FOR I=0 TO 31:CIRCLE 75,I*3,SIN(I/10)*10,6,0:NEXT I
CLS:FOR I=0 TO 280:CIRCLE ABS(140-I),SIN(I/15)*30+50,10:NEXT I
CLS:FOR I=0 TO 99:CIRCLE 75,I-20,TAN(I/70)*10,I/50,0:NEXT I
CLS:FOR I=0 TO 90:CIRCLE 75,50,I,I/50,I/15:NEXT I
CLS:FOR I=0 TO 13 STEP.1:INK I+2:CIRCLE 75,50,15,9,I.NEXT I
CLS:FOR I=0 TO 2*PI STEP .1:CIRCLE 30*I,50,15,9,I:NEXT I
```

One Liner
by S Armstrong

The Music Box

Musicisn's srt

Just to demonstrate the unbiased nature of this column, this week I'd like to mention three books brought out by Sunshine Books, whose associate company is also responsible for *Popular*.

Ian Waugh's *Making Music on the BBC Micro* (£6.95) has been out for a year or so now. I have found it a useful – if patchy – volume, full of handy programming tips and ideas. In computer music, there is nothing quite so valuable as good ideas – which makes Waugh's book worth having, if you're a BBC owner.

The main problem with this book – as with the other two I'll deal with – is that it is as I've suggested, somewhat variable. It doesn't pretend to be definitive and, like most computer books, seems to have been written in some haste. These are not necessarily major faults, but one does still long for a truly comprehensive text.

Waugh's follow-up book – *Commodore 64 Music* (£6.95) – is aimed obviously enough, at the Commodore owner. Here, I think, the author was faced with a new problem. As computers go, the Commodore is so versatile musically that it's difficult to know where to begin and what to include. Waugh struggles gamely with the wealth of possibilities, but somehow seems to pull less out of the hat than he did with the more restricted BBC. Worth having, though, for his chapter on the computer as composer alone.

Published at the same time as Waugh's Commodore book is Mark Jenkins' *Electronic Music on the Commodore 64* (£6.95). This is altogether another kettle of fish from an author who worked on *Electronic Soundmaker* and *Computer Music* and is now technical editor of *Melody Maker*. Jenkin's knowledge of electronic music is extensive and is well displayed in his book. In some ways, however, the very depth and breadth of the author's knowledge is the book's major shortcoming. In parts, it reads not so much as a book, but as a consumer manual and the problem with consumer manuals is that they date quite quickly – especially in such a rapidly developing field as computer music.

You'll be able to find information in *Electric Music on the Commodore 64* on a stunning range of available software and hardware of all descriptions. Wonderful reference material for the beginner, but – I'm afraid – with very little depth. There are a number of Basic programs included, but nothing really startling or that takes the computer musician's art very far. As with Waugh's books, the requisite 'What is sound?' and 'What is music?' sections are there and, as usual, they smack just a little too much of padding.

I must confess to this sin myself. My own book (*Micro Music*, published by Papermac (£5.95) in April), also includes the sections mentioned above and, in truth, the temptation to include this sort of stuff was all but overwhelming. I leave it up to readers to determine which book has coped best with the difficulties of writing practical texts on computer music, merely mentioning that *Micro Music* contains programs and information for the Commodore 64 and BBC.

Gary Herman

The Music Box is a weekly column with news, reviews and readers comments on all aspects of micros and music.

Any readers with experience of computer music making or companies with new product news are invited to write to drop a line explaining what they're doing to Gary Herman, The Music Box, 12-13 Little Newport Street, London WC2R 3LD.

Link to Giant Mainframes and network to thousands of Micro users via your 'phone with free Moderns and Comms software in the British Telecom Modem competition.

British Telecom is offering 1000 free gift packs to plug direct into your home 'phone line.



1000 FREE MODEMS

500 for Spectrum/Spectrum +
350 for BBC Model B
150 for Commodore 64

And if you haven't got a square-type BT phone socket, British Telecom will arrange to alter your installation at no charge!

HOW TO ENTER

(Monday 22nd April to Sunday 5th May 6pm to midnight)

For the 5 questions phone
01-627 3000 or
021-449 9944 or
031-225 8999

To get the Tiebreaker Sentence phone
01-627 1199 or
0532 455030 or
0632 324444

Complete the entry form using your skill and judgement, and send it off in the next post

RULES OF THE BRITISH TELECOM MODEM COMPETITION

1) The dial-in is available from 6pm Monday 22nd April to midnight Sunday 5th May 1985 when the competition closes.
2) Entries must be postmarked the next working day after the questions and tiebreaker were obtained.
3) Entries can only be made on the official entry forms and become the property of British Telecommunications plc.
4) The competition is open only to residents of the United Kingdom over the age of 18 years. Employees of the Network Marketing Unit of British Telecommunications plc and PARKER TREMBLE LTD and their dependants are excluded. Only one winning entry per household.
5) Entries not reaching the competition address before midnight on Thursday 9th May 1985 will not be considered.
6) A list of winners will be provided at the competition address. Please send an SAE if you wish to receive it.
7) The winners will be picked as follows from entries received on time and properly completed.
The entries for each type of prize pack with all correct answers to the 5 questions and with the tiebreaker available judged most apt and humorous by the competition organisers will be chosen subject to the stock of appropriate prize packs.
8) The decision of the competition organisers is final and no correspondence will be entered into. Winners will be notified automatically.
9) British Telecommunications plc offers winners requesting BT phone socket conversion on entry forms to waive the charge normally made for such work.
10) Details of how to get on Prestel, Micronet 800, Telecom Gold will be sent to winners. Subscriptions not included in prize.

OFFICIAL ENTRY FORM

A. Your answers
Q1
Q2
Q3
Q4
Q5

B. Tiebreaker Sentence complete (25 words or less in total)

C. If I win I would like the prize pack for the
☐ SPECTRUM/SPECTRUM +
☐ BBC MODEL B (Tick Choice)
☐ COMMODORE 64

D. My home telephone line (* Delete as appropriate)
(a) already has a square-type BT 'phone socket * or
(b) would need converting to square-type BT phone socket *
If (b) the person renting the line from British Telecom must fill in this declaration—
If this is a winning entry I agree to ask British Telecom to convert my line to square-type BT phone socket at a convenient date before 1st July 1985. My line is on Residential rental, is not a coinbox and is not shared service. I understand British Telecom will not charge for doing the work.

Name (Block Capitals)
Telephone number
Signature
Date 1985

E. I have read the rules of the British Telecom Modem competition and agree to abide by them. I am over 18 years old.

Signature of entrant
Date 1985
Name (Block Capitals)
Address
Postcode

POST IMMEDIATELY TO —
British Telecom Modem Competition
PO BOX 73
MITCHAM
SURREY
CR4 2XU
(Postage stamp required)

WINNERS WILL BE NOTIFIED AUTOMATICALLY

British Telecommunications plc Registered Office 81 Newgate Street LONDON EC1A 7AJ Registered in England no 1800000

Address Tags

on Commodore 64

The program itself is mainly constructed using strings and variables to carry the information eventually to be outputed to the printer

Because the program works with only Basic commands and no pokes, peeks or other 64 configurations it should work perfectly on the Vic-20 as well as the 64

You are first asked what colour you want which is entered in number form (variable A) The actual address is than entered in but in word form The shift is used for capitals and the printer is also set in lower case

Lastly you are asked how many times you would like the entered address to be printed (*tm* for times and *pri* for print)

I often use this program when I have a lot of addresses to type out, as I have appalling handwriting It is set in the 20 characters per line mode which I think is sufficient

```
1 OPEN4,6 OPEN3,6,3 OPEN2,
  6,2 OPEN6,6,6
2 PRINT#6,I'PRINT#2,0 PRINT#3,3
3 POKE53272,22·PRINT#4,"  LETTERS"
4 PRINT"J"
5 PRINT" PLEASE TYPE IN IN
  NUMBER FORMS ONLY"
6 PRINT" UNLESS INSTRUCTED"
7 PRINT"XXX COLOUR OF PRINTINO ON
  ADDRESS TAGS
8 PRINT"# 0 - BLACK WRITING"
9 PRINT" 1 - BLUE  WRITING"
10 PRINT" 2 - AREEN WRITING"
11 PRINT" 3 - RED   WRIIING"
12 INPUT"X COLOUR REQUIRED ";A
13 IFA=<0 OP A>3THENPRINT"MISTAKE!!|
   TYPE AGAIN"·GOTO12
14 PRINT#2,A
15 PRINT"J"
16 REM
17 PRINT"              # ADDRESS "
18 PRINT"XXX CNLY 40 LETTERS PER
   LINE PLEASE"
18 PRINT"X *** 6 LINES TO COMPLETE
   ADDRESS ***"
20 PRINT"X USE RETURN FOR NEW LINE"
21 PRINT"X HOLD DOWN #RETUPN#
   FOR CAPITALS"
22 INPUT"XX LINE 1 ";A$
23 INPUT"LINE 2:";B$
24 INPUT"LINE 3·";C$
25 INPUT"LINE 4:";D$
26 INPUT"LINE 5:";E$
27 INPUT"LINE 6 ";F$
28 PRINT"J"
29 PRINT"XXX *** NOW MANY TIMES TO
   BE PRINTED ***"
30 PRINT"XXXXX"
40 INPUT"TYPE IN HOW MANY ";T
41 PRINT#3,1
50 FORPRI=1TOT
51 PRINT#4,A$
52 PRINT#4,B$
53 PRINT#4,C$
54 PRINT#4,D$
55 PRINT#4,E$
56 PRINT#4,F$
57 PRINT#4,PRINT#4,PRINT#4,
   PRINT#4·PRINT#4
58 NEXTPRI
59 PRINT"J"
60 PPINT " THIS IS WHAT SHOULD BE
   ON THE TAGS NOW"
61 PRINT"XXX"
62 PRINTA$
63 PRINTB$
64 PRINTC$
65 PRINTD$
66 PRINTE$
67 PRINTF$
```

Address Tags by M Williams

Book Ends

Book *The Art of Microcomputer Graphics* **Price** *£14 95* **Micro** *BBC/Electron* **Supplier** *Addison-Wesley Publishing Company*

This large and practical volume concentrates on Computer Aided Design (CAD), combining theory with listings to enable the BBC or Electron user to delve deep into the micro's artistic possibilities Black and white and colour illustrations make it an attractive volume

It is well balanced, explaining the mathematics of pattern generation before providing programs which utilise the formulae many of the listings make great use of procedures, encouraging structuring

In addition to wire framing and 3-D rotation more unusual topics such as tesselation (repeated shapes which fit together), anamorphic distortion and symmetry are dealt with.

In fact, the potential of this book is only limited by the reader's interest in CAD and their own imagination

John Minson

Book *Logo on the Sinclair Spectrum* **Price** *£8 95* **Micro** *Spectrum* **Supplier** *Papermac, 4 Little Essex Street, London WC2R 3LF*

Logo is probably the most misunderstood computer language, most people think of it as synonymous with turtle graphics and nothing more Here though is a guide to Sinclair Logo that develops it from the ubiquitous pattern drawing through list processing, mathematical operations, input, sound and finally debugging

While it is also seen primarily as an educational language, this book is aimed not at children but at parents, teachers and older experimenters. Its style is matter-of-fact but clear, and there are many practical examples, including the development of a couple of slightly longer projects There's also a comprehensive index

It should provide a useful adjunct to the Sinclair Logo manual for the newcomer, but at just over 100 pages it's rather slim for its price

John Minson

High scorers

There's a lot to do this week so let's not waste time. From David Ratledge of Nazeing comes a letter full of tips on how to get through *Raid Over Moscow* for the Commodore 64 which he finished with a score of 152 500 and 5 commandoes remaining on the beginner level. "*Space Station* – take off and go to the right of the doors. Face to the right and begin to edge forward. Occasionally press the fire button to stop you crashing and face your plane towards the doors as you slowly travel right. When in front of them open and push forward on the joystick to fly out. *Attack Run* – do not use the height controls, stay low and fly under the bridge. To fly through the obstacles fire a missile and if it goes to the centre of the gates you will get through without crashing. *Missile Silos* – the small silos can be easily blown up by using the feature that makes your plane turn blue when you are in line with them. *Defense Centre* – keep moving to give you less chance of being shot. Shoot the doors before you kill the soldiers. *Reactor Room* – follow the robot with the dot on the wall. Try to catch any discs that miss it. Fire as soon as the robot begins to inject the coolant." Thanks David, that should help out some people in trouble.

Another packed letter comes from Gordon McCabe who has finished *Rally Driver* by Hill MacGibbon back on 19th Feb, winning the last stage in 13 32 minutes. Gordon says – "always keep at around 40mph on twisty bits of road. When cornering, approach on the inside with your wheel nearly off the road. When you enter the apex of the corner turn the wheel hard! Then slowly accelerate out of the corner. Always have a friend to act as navigator to tell you when a time control is coming up etc. On the BB12 stage 1 there is a very difficult right turn with a windmill on the inside. You need to charge into the apex, then brake hard and slowly accelerate out otherwise you will always crash. Try and go round the edge of animals and spectators as blowing your horn wastes time." Gordon gives loads more tips about the routes that you need to take, and the precise techniques they need and invites anyone stuck to write to him at 8 Clivedale Rd, Woodley, Reading, Berks.

Here's an amazing thing from Greg Holmes of Barrow in Furness – "whilst hacking around in the Spectrum version of Alligata's *Son of Blagger* I came across this message at address 25500 from its modest author Elliot Gay." Enclosed was a print out which is too long to reproduce here but it begins "Welcome to all hackers. I'm Elliot, author of this megabrilliant program. I'm glad you've decided to look inside" and gives a history of Mr Gay's life. Weird. Greg also discovered this routine – "Merge basic loader, delete lines 70,80 81 82 and 90. Type in at line 45 *Poke* 27278,0. When loaded and the credits have finished you will then be presented with a menu that allows you to start on any of the 12 levels and also infinite lives." It seems that Elliot has thought of everything a hacker may need. Greg also gives us these *Pokes* – *Gilligan's Gold* unlimited lives *Poke* 52861,0 *Poke* 52862,0 *Poke* 52863 0, *Knight Lore* *Poke* 49759 n where n is the number of objects you wish to collect to finish.

Michael Kohut of Leeds has written in to confirm that there really are two versions of *Monty Mole*, and the one with the headerless block of code is making it difficult to enter our infinite lives *Pokes*. Can anyone find a way of getting them in?

Paul Allen of Sudbury has written with some sophisticated tips for *Zombie Zombie* which he has finished with a high score of 1773. "When the zombies are walking together along a wall land on top and they will split up. When you're after 4 or 5 split them and pen them singly or in pairs by dropping bricks around them, at least two bricks high. They always turn left when they hit a wall so you don't have to drop many to make them go in circles. When there are one or two walking around freely, deal with those then go back to the pen and collect another one. My high score with *Ant Attack* is 46,418. A couple of weeks ago I loaded this up and to my surprise there was a doorway next to the low wall where you enter the city. I've had this game nearly a year and this has never happened before. I can't wait for Sandy White's next game.

"My recommended games are *Ant Attack* and *Zombie Zombie*, *Wheelie*, *Skool Daze*, *Pyjamarama*, *Trashman*, *JSW* and *Manic Miner*. I've just started playing the brilliant *Skool Daze* but it's hard and I can't seem to hit the shields on the second floor by jumping on one of my mates. Can anyone help? Finally my *Zaoom* high score is 160,500."

All the way from Motherwell in Scotland comes a letter from Douglas Smith who wants some *Pokes* for the Vic 20 game *Perils of Willy*. "My highest score is 40 680 and I have reached the 18th screen. If you want to toggle the music on and off use F3 and F5. Here is my tip for people still struggling on the sixth screen – if you walk to the right until you are below the green platform then jump up, jump to the left and you will land on the bottom of the conveyor belt, then jump again and you will get the musical note below the falling platform."

To finish off this week here are some high scores – from Gary Burrows of Halewood, *Kokotoni Wilf* finished with 82 items, *Monty Mole* finished with 3392, *Molar Maul* level 12, *Cookie* 26275 and *Hungry Horace* 8950. Also from Liverpool Kevin Griffiths has finished *Wilf* as well, scored 2555 on *Monty Mole* and 170,000 on *Manic Miner*. Whilst on the subject of Wilf perhaps one of you two has some tips for Robin Heighway of Tamworth in Arden.

The latest to finish *Pyjamarama* are Carolyn and Robert Hinds of Chester who have scored 91%, 4843 paces, and 97% 4813 paces respectively. Like many people they have pointed out that finishing this game does not spoil their enjoyment of it. They also want some *Pokes* for *Skool Daze*. Keven Watson of Forres in Scotland has also finished with 97%, 4145 paces, has completed *Beach Head* with a score of 'over 100,000' and *Antic Atac* with 96%. Well done all of you.

Tony Kendle

We are searching for the top UK computer games player – the best there is!

The very best of Britain's game players will get to fight it out on a number of top secret new games – scheduled for release in the autumn

Here's how it works

Study the table below and look at the column for the machine you have – these are the games you'll need to master. Send your high scores in on the form below, making sure that your scores are authenticated by a responsible individual signing the form. Any scores achieved using technical short-cuts – such as infinite lives Pokes – will not be accepted.

Between now and September Tony Kendle will be keeping you up to date on the *Arcade Avenue* page with just who has the scores to beat. Then, in September the top three scorers on each machine will battle it out for a place in the final and the chance to be the first to play our top secret games.

	Commodore	BBC	Spectrum	Amstrad
Game 1	Suicide Express	Elite	Technician Ted	Sorcery
Game 2	Beach Head	Jet Pac	3D Star Strike	Spannerman
Game 3	Shoot the Rapids	Chuckie Egg	Cyclone	Manic Miner

Game Wizard Entry Form

Micro

Game 1 score

Game 2 score

Game 3 score

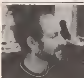
Name

Address

Your signature

Witness's signature

Tony Bridge's Adventure Corner



Spine-tingling

Adventures – well, any new program, I guess – don't come along too often for the Vic 20, and there are still fewer software houses still committed to producing these programs in any quantity. Harddata of London is one source of software for Vic-ers, and they have just released a new adventure. Called *Heart of Darkness* and priced at £5.95, it is for the 16K machine and written by J Wilmott. It's of the standard two-word command type, and according to the leaflet supplied with the tape, 'tends to be more realistic than your average Dungeons and Dragons type of game . . .' Apparently the author's realism consists of locations which become no-go areas once visited.

But I mustn't pre-judge *Heart of Darkness* – being introduced to the wonderful world of computers via the Sinclair route, I haven't had the privilege of access to a Vic, so this adventure must remain a closed book to me for the moment. However, I will pass the tape along to one of the more enlightened colleagues: let's hope that a critique will be forthcoming. Harddata, 19 Vicarage land, East Ham, London E6 4AB.

Many moons ago, SCR Adventures sent a tape of their latest effort to the Grand Elf. Called *Castle Blackstar*, it was a text-only adventure and had rather too many inconsistencies in the programming for it to stand out among the other adventures of the time. But in the past few weeks, one or two Corner readers, particularly Hugh Walker of Guildford, have been championing the cause of *Castle Blackstar*, and this has persuaded me to have another look at the game. Another reason is that it has been revamped and tidied up, and the marketing taken over by CDS Micro Systems, who have re-released the adventure at £6.95.

Hugh Walker and the other readers are all very discerning adventurers, and if a program passes their scrutiny, it must be worth a spin. Thanks to a few hints, as well as the solution for Hugh, I have now been able to progress somewhat further than my first bungled attempts.

You have been sent on a quest, by Lady Artemis (the daughter of Zeus in Greek mythology) to recover the Power Orb and return it to her. Artemis' prowess with a Bow and Arrow may give you a little pointer to the way into the Castle – once in, you will become immersed in a game fairly steeped with atmosphere.

The character set has been re-designed so that, on the Spectrum, it now looks like a BBC set (what does the BBC version look like?) and the screen layout is very neat. The game is rather complex, and would seem more suitable for the experienced adventurer, but they will be assured of a tough series of puzzles. A feature that was unique at the time of its first release (though not now – Artic's *Curse of the Seven Faces* has a similar facility) is the 'Freeze' command. This enables the faint-hearted or cautious adventurer to save his present position to a *Ram* buffer, thus by-passing all that fiddling about with the cassette machine.

Castle Blackstar has been converted from the Spectrum to a wide range of other machines, including the Amstrad, BBC, CBM64, Dragon 32/64 and MSX. CDS Micro Systems, Silver House, Silver Street, Doncaster, South Yorks, DN1 1HL.

But back to business – this week I want to look at a graphic adventure that will become a classic. Another game, *Out of the Shadows*, will I'm afraid, have to wait for a week or two for a mention, although I think that it is wonderful. But I've just been playing *Alien* from Argus Press Software, and feel that I should pass on the good news. One of APS' Mind Game series, *Alien* is, of course, based on the film of the same name. This film is one of the best science-fiction whodunnits (or, more precisely, Whowillgetdun) ever made, and one of the few genuinely disturbing films.

The packaging is excellent, from the well-illustrated box to the marvellous booklet, which features a run-down of 'the story so far . . .'. If you have seen the movie, you will be well-acquainted with the claustrophobic atmosphere on board the factory starship Nostromo, host to several humans, one extremely human-like robot, one elusive cat, and the eponymous Alien.

The program is entirely joystick-driven, via a series of menus. Thus, from a menu, a character (Dallas, Ash, Ripley, Bratt, Kane, Lambert or Parker) is selected by moving the joystick up or down until the particular name is highlighted. Now, another menu is presented, from which you may select to move to another location, pick up an item present at the location, or drop an item. Other special actions my be possible, like Use Flame-thrower, Remove Grill and so on.

APS couldn't resist dragging in the obligatory 'unique programming technique'. In this case, it's PCS (Personality Control System). What this means is that you can order Ripley to proceed to the laboratory and then immediately switch to Ash, knowing that Ripley is now on her way. Also, the various characters have different personalities, and their feelings change throughout the course of the tame as they become more or less confident/terrified.

As overall commander, you may order the characters to do whatever you wish, but the over-riding objective is to win the game – and this can be done in one of two ways. Either kill the Alien or find Jones, the Cat and take him to the rescue pod after scuppering the Nostromo. Leaving with Jones and nobody left alive on the ship wins the game (although you may not get 100% for doing it this way!)

Sound plays an important part in *Alien*, with the monster itself making a bit of a racket when emerging from the duct system and the *Beep* of your tracker indicating an important discovery. I have a theory that computers age in the same way as dogs, ie, one computer year equals seven human years.

The screen display is at all times very well presented, with a recognisable thumbnail sketch of the character you have selected, and floor plans of the level you are currently concerned with. And program response is instantaneous – sometimes to disadvantage, as I found when selecting an option and leaving my finger on the button a nano-second too long. But this isn't too much of a problem, and in fact adds to the suspense in a way.

The film turned the screw very ably and wound up the tension – and so does the program. I've never been terrified by a computer program yet, but the first sight of the Alien, looking at its next meal and slowly twitching its tail and picking its teeth was enough to send shivers down my spine!

Adventure Helpline

Going bananas? If you are stuck in an Adventure with nowhere to turn do not despair – help is at hand.

Fill in the coupon, explaining your problem, send it to us and a fellow adventurer may be able to help.

Remember – the system only works if those adventurers who have solved the puzzles get in touch. Every week is Save An Adventurer Today (SAAT) week!

Adventure .... on (Micro) ....
Problem ....
....
Name ....
Address ....
....


GOLD
EDITION
48K SPECTRUM

SOFTWARE

AT EXPLOSIVE PRICES UP TO 50% OFF

A superb selection of the top cassette based titles for all the popular makes of computers are offered with up to 50% discount off the manufacturer's recommended retail prices. No messing, full money back guarantee if not highly delighted. If you don't see the title you are looking for, send for our FREE descriptive catalogue of all the titles we have available.

★★★★★ TRADE AND EXPORT ENQUIRIES WELCOME ★★★★★

BBC

BBC & ELECTRON

COMMODORE

VIC 20

DRAGON

ELECTRON

SHARP

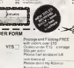
SPECTRUM

ORIC-ATMOS

ZX81

AMSTRAD

☎ 01 446 5648



PRIORITY ORDER FORM

SOFTWARE
Please rush to me
FREE descriptive catalogue (please tick) YES ☐
Computer make and model
The following titles (Quote item number)

Item No	*Unit Price*	*Quantity*	*Total*
		TOTAL	

Postage and Packing FREE with orders over £10
Orders under £10 carriage 50p per order
Please find enclosed full remittance of ________
Please debit my Access/Barclaycard No
Signature
Address

Tel No

PHILIPS & PHILIPS CO LTD Scriptomatic House, Torrington Park, Finchley London N12 9QU

Peek & Poke

Strange effects

P Winston, of Chippenham, writes

Q I have a 48K Spectrum, and I have noticed that if you give a high value as the third parameter to the *Draw* statement that strange effects result (not just a single line). Are these effects known and what causes them?

A The effect you have noticed (spinning stars, circles, squares, etc), is caused by a bug in the Spectrum *Draw Rom* routine.

It is quite a well known bug, which because of its spectacular results, I call it the 'fast star effect'. Some interesting values to try are:

599 Turning star
499 Turning triangle
399 Turning square
299 Turning hexagon
799 Rotating straight line
750 Result is a multi-pointed star

Demonstration program

O Toth, of London, writes.

Q I own a Vic 20 with a 64k Ram expansion. 32k for software usage, the other half of the Ram for a filing system. My problem is, the demonstration program for reading and writing data is not working. The program is as follows:

```
10 Open 1,200,1
20 Print#1,"ABC":
   PRINT#1,"PQR"
30 Close 1
40 Open 1,200,1
50 Input#1,a$: Print a$
60 If st 0 Then 60
70 Close 1
80 End
```

The output should be:

```
RUN
ABC
PQR
READY
```

Instead of this I get the message *Device Not Present* referring to line 20. Always the same answer. Please put me right if you can.

A The message you are getting means that the Input *Open* statement has not had the desired effect. I presume that the device number of 200 is required by the particular application you are using as it is non-standard. If the use of this device is to enable you to store data in the extra 32k then the error you are getting would indicate a problem with the expansion Ram.

If you change line 10 to read *Open* 1,1,1 and line 40 to read *Open* 1,1,0 then you should be able to read and write to cassette quite successfully.

Users request

J Townshend, of Manchester, writes

Q I am writing a program on my Spectrum+ and I wish the output from the program to appear on the printer at the Users request, as well as on the screen.

I can obviously do this by lots of tests in my program, but are there any quicker methods, or *Pokes* that I could use?

A The easy answer to your question is ... Yes!!!

Open #2,&P&, will cause everything sent to the screen to be automatically printed. To turn off this effect use *Close* #2

Oric questions

Oric user, of Gwent, writes:

Q I know that you do not often get questions from Oric-1 owners but there are still some of us left! My questions are these:

A) What location holds the address of top of memory?

B) What are the addresses for the X and Y coordinates of the cursor?

A You are correct in saying that I do not get many queries from Oric users, however, the answers to your questions are as follows, A) decimal 166, and B) X coordinate = 537, Y coordinate = 538.

As to your comment about the number of Oric users, I might as well point out that Oric sell a lot of machines in Europe, especially France.

Blank screens

D Rate, of Belfast, writes

Q I heard some time ago that there was a method of increasing the speed of CBM 64 Basic programs. I know that it is something to do with filling the screen with blanks, but when I tried that it did not work.

***Do* you know of this method, or have I got it all wrong?**

A *Poke* 53265, *Peek* (53265) and 239, is I think what you are referring to. This *Poke* has the effect of setting the Screen colour to the Border colour. When set in this way, CBM 64 Basic runs about 8% faster.

The screen contents are not destroyed by this *Poke*. To return the screen to normal use *Poke* 53265, *Peek* (53265) or 16

Legal permission

Paul Burgin, of Sheffield, writes

Q My friend and I are just adding the finishing touches to a screen designer for a popular arcade game. We hope to have finished it soon, and when we do we are hoping to sell it. Could you tell us what legal permission we will need from the company that produced the original game. Will we need to pay them royalties? Also we are hoping to sell it under the name of 'Hyper-Soft'. Will this be legal or is there another company operating under this name?

A They say that imitation is the sincerest form of flattery, and as your software will need the customer to have already obtained the base game, I doubt that you would have any problem. Having said that, it would only be courteous to ask their permission to use the name of their game in any adverts you might place. As far as the company name is concerned if you used the name Hyper-Soft (Sheffield) then there is virtually no chance of you being confused with any company that might already be using this name.

Hi-res to printer

P Ellis of Gloucester, writes.

Q I own a Dragon 32 and a Seikosha printer. Can you tell me how to Copy from the high resolution screen to the printer. I cannot get anything.

A After some research and a few late nights, I have come up with the following program (it is not the fastest in the world but it does work!)

```
10 PMODE 4,1: SCREEN(1,0)
20 PRINT#-2,CHR$(8)
30 FOR x = 0 TO 191 STEP 7
40 FOR y = 0 TO 255
50 S = PPOINT(y,x) + PPOINT(y,x+1)*2 + PPOINT
(y,x-2)*4 + PPOINT
(y,x-3)*8 + PPOINT
(y,x-4)*16 + PPOINT
(y,x-5)*32 + PPOINT
(y,x-6)*64 + 128
60 PRINT#-2,CHR$(s)
70 NEXT y
80 PRINT#-2,CHR$(13)
90 NEXT x
100 PRINT#-2,CHR$(15)
```

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Phil Rogers and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke*, *PCW*, 12-13 Little Newport Street, London WC2R 3LD

CLASSIFIED

Semi-display — £6 per single cc
Lineage — 25p per word

CALL *DIANE DAVIS* ON *01-437 4343* FOR SEMI/DISPLAY ADVERTISING

GAMES SOFTWARE

ZX81 SOFTWARE
Special Offers [illegible]
Send s.a.e. for brochure

BRIDGE SOFTWARE
[illegible] Hillside Road
Corfe Mullen
WIMBORNE [illegible] PL200

SPECTRUM SUPERFRUIT Do you have trouble with nudges? The graphics on this program (8 character squares per fruit) are identical to those found at arcade centres. Another bonus, you can copy this program and sell it without paying us royalties. No, we are not drunk! Just send £5 to P. Cheung, 42 Bramfield Ct, Queen's Drive, London N4 2XH

GAMES DESIGNERS! Put unbelievable microspeech into your program make your program stand out from the rest. Easy to use and requires no hardware. Introductory offer of just £3 (48K Spectrum) Buy it now. Send cheques/POs to K. Maddocks, 8 Pine Dale, Rainford, Merseyside WA11 8DP

COMPUTER AND COMPUTER GAMES BOUGHT/SOLD/EXCHANGED
Discounts on new computers
Disk drives, printers, joysticks etc.
Commodore, Sinclair, Amstrad contact:
Sight and Sound
at: 199 Church St, Bilston or 13 Bradford Street, Walsall or 24 Darlington Street, Wolverhampton.
Tel: 42007 PL484

SPECIAL OFFER FOR ATARI 400/800/800 OWNERS
Hire 1 or 2 games FREE from our extensive range of software. Latest releases! Apply now. Also Atari hardware & modems for sale at discount prices.
For further details send SAE to
CHARNWOOD GAMES, 27 WARWICK AVENUE, QUORN, LOUGHBOROUGH, LEICS.
TEL. [illegible]

NEW HORIZONS SOFTWARE present BUGBURST and CHOMPER
[illegible]
Only £4 each or £7 for both. Fast machine code [illegible]
Make cheques/POs payable to New Horizons Software, [illegible] PL394

ORIC BARGAINS from £1.00
Games and Serious Software, Books and Accessories. SAE for list to
P.U.C. (Mailorder), 36 Meadowcroft, Euxton, Chorley PR7 6BU PL[illegible]

CRICKET STATISTICS
[illegible]
*IDEAL for clubs, schools and [illegible]
ONLY £4.50
*STATISTICS [illegible] for any combination of user-defined competitions.
*DATA entry using unique Scorecard [illegible] saved for reference. PLUS individual player option.
*AVERAGES [illegible]
*PLAYER RANKING [illegible]
Cheque/PO: [illegible] Software, Dept PCW [illegible]
[illegible] Road, [illegible], Kent [illegible]
SAE for details
PL309

THREE ADVENTURES for the Spectrum. Desert Island, Mansion Quest, Castle Adventure. £1.50 each, order all three and get a fouth adventure free. W. Pooley, 12 Handfield Road, Waterloo, Liverpool 22 0NX.

GOLD MINES of Geriatecia. Fast action 12 screen arcade game. 48K Spectrum. Cheque/P.O. £3 payable A. Jermey. Send to Electrasoft, 54 Beccles Road, Bradwell, Gt Yarmouth, Norfolk

ACCESSORIES

EPROM SPECIAL

2708	8K	£8.00
2716	16K	£8.50
2732	32K	£7.50
2764	64K	£8.90
27128	128K	£19.90

Cash with order to
ELECTRONIC COMPONENTS
45 CHURCH ST
ENFIELD EN2 6AT PL98

Bulk Pack MEMOREX 5¼" DISKS

	10	50	100
SS/DD (48tpi)	10.90	47.50	86.00
DS/DD (48tpi)	20.40	98.00	181.00

Add p&p [illegible] per 10, 21.00 per 50, 25.00 per 100
Add VAT at 15%. Box provided free
ABACOM COMPUTER SUPPLIES
426 Walton Rd, Woking, Surrey GU21 5EF
Tel 71563 (after 7pm)
(Mail order only) PL307

QUALITY USED DISKS, 80p. Mr NG, 225 Walton Rd, Woking, Surrey. Tel (04862) 71563 (after 7pm)

PROTEK MODEMS
1200 Baud (inc Interface)

Micro	Our Price
48K Spectrum	£70.00
BBC B	£70.00
Commodore 64	£70.00
Oric Atmos	£75.00
Amstrad 464	£75.00
Electron	£75.00

G lead. Fully inc. Price
UK HOME COMPUTERS
82 Churchward Ave
Swindon, Wilts SN2 1NH
(0793) 695034 24hr

MEMOREX or MAXELL DISKS
80p + VAT
ABACOM COMPUTER SUPPLIES
225 WALTON ROAD, WOKING, SURREY
Tel: 04862 71563
(after 7pm) PL305A

BLANK CASSETTES
WITH LIBRARY CASES

	C10	C15	C20	C30
10	3.60	3.80	4.00	4.00
50	16.00	14.10	14.30	14.50
100	26.00	26.00	27.00	27.00

Fully inclusive (C90 [illegible] extra)
Superior Tapes, Don't Settle for Less!
* * *
5¼" DS/DD DISKS
10 for £13.00 full vat inc
* * *
RING US NOW! (0793) 695034
UK HOME COMPUTERS
82 CHURCHWARD AVE
SWINDON, WILTS SN2 1NH PL[illegible]

QL DUST COVERS
PROTECT YOUR QL WITH OUR QUALITY BLACK VINYL DUST COVERS
£4.90
Send cheque/PO to
PI COMPUTERS
Corner House, Biddestone
Chippenham, Wilts SN14 7DP PL308

AMSTRAD

AMSTRAD "THE DESIGNER"
A comprehensive graphics management utility featuring:
[illegible]
"HEADER DOCTOR"
[illegible]
Limited Offer – Both on one tape £4.90 inc. P&P cheque/PO to
CB SOFTWARE (Dept A)
[illegible] PL300

AMSTRAD CPC464 ADVENTURES
CAN YOU HANDLE ANGELIQUE?
"A feast of entertainment"
[illegible] PCW March '85
"I recommend it highly" PCW March '85
ANGELIQUE: A GRIEF ENCOUNTER £6.50
DRAWN [illegible] £2.00
A full size adventure, a silly price (UK only)
ALL ANGELIQUE Adventures still available at £6.50 each
Cheques/POs for immediate despatch or enquiries to:
NEMESIS (PCW)
10 CARLOW ROAD, RINGSTEAD,
KETTERING, NORTHANTS NN14 4DW PL514

AMSTRAD TAPE UTILITY
Load all your software at up to 4 times normal speed. Fully automatic choice of 4 speeds, removes protection, load all blocks in one go. The only one to handle headerless files.
Only £6.00
Including tape header invisible
£12.95 on disk
SIREN SOFTWARE (DEPT PCW)
76 Bridge Street, Manchester M3 2RJ
PL40c

CLASSIFIED ADVERTISING RATES:

Line by line: 25p per word, minimum 20 words.

Semi-display: £6 per single column centimetre, minimum length 2 cm. (Please supply A/W as PMT. Or supply rough setting instructions.)

Conditions: All copy for Classified section must be pre-paid. Copy date 7 days before publication.

If you wish to discuss your ad PLEASE RING Diane Davis 01-437 4343

Here's my classified ad.

(Please write your copy in capital letters on the lines below.)

		Please continue on a separate sheet of paper	

I make this .... words at .... per word so I owe you £ ....

Name ....

Address ....

....

....

Telephone ....

Please cut out and send this form to: Classified Department, *Popular Computing Weekly*
12-13 Little Newport Street, London WC2R 3LD

SOFTWARE



BARGAINS
BY POST
SOFTWARE

The Spreadsheet	RRP £19.95/£4.95
COMMODORE 64	
Valhalla (Legend, RRP £14.95)/£4.95	
SINCLAIR SPECTRUM 48K and PLUS	
Sinclair Six Pack	£9.95
Valhalla (Legend, RRP £14.95)/£4.95	
The Great Space Race (Legend, RRP £14.95)/£4.95	
The Database	(MICRO-L £9.95) £2.98
The Word Processor	(MICRO-L £9.95) £2.35

HARDWARE

Sinclair QL (no credit cards)	£349.00
Spectrum Plus with over £100 worth of software including 6-pack	£129
Sinclair Flat Screen Pocket TV (RRP £97.95) 1 only - phone	£84.95
ZX Spectrum Expansion System	£84.00
ZX Interface 1 (RRP £49.95)	£37.95
ROTRONICS Wafadrive (RRP £129)	£114.95
Sinclair BASIC Programming Manual (not supplied with Spectrum +)	£1.50
Spectrum Power Pack 1400	£5.00
Spectrum Cassette Leads	75p

All offers subject to availability
Delivery normally 2-7 days

Access/ Visa orders phone 0223 312453

Send UK cheques, money orders to:

SOFT SPOT

Dept PCW, 10 Chapel Lane, Wicken, nr Ely, Cambs CB7 5XZ

CAR CURE

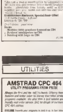
SIMTRON
4 BLAKENEY DRIVE, EAST GRINSTEAD, W. SUSSEX

HOME ACCOUNTS Put your house in order! Comprehensive coverage of bank accounts credit cards HP etc (with accuracy check. Projects cash flow for any period. Available for CBM64, VIC 20, BBC & Electron £8.46. Free details from Discus Software Freepost Windmill Hill Brixham TQ5 9BR Tel 080 45 56622

MAGAZINES

DRAGON USER

To make the most of your Dragon you need Dragon User — the independent magazine for Dragon owners. To make sure that you receive a copy of Dragon User regularly subscribe direct to us. A year's subscription costs £10 for 12 issues (overseas rates available on application). Send a cheque or postal order made payable to Dragon User and accompanied by your name and address to Dragon User Subscription Department Oakfield House, Perrymount Road, Haywards Heath Sussex RH16 3DH



COMMODORE HORIZONS

Special offer! For a limited period only!

Commodore Horizons, Special Book Offer!

Books
Machine code graphics & sound on C64
Artificial intelligence on C64
Building with Logo on C64

UTILITIES

AMSTRAD CPC 464
UTILITY PROGRAMS FROM PRIDE

TAPE TO DISC CONVERSION

SPECIAL OFFER WORTH £3.95

PRIDE UTILITIES LTD (PW)
7 CHALTON HEIGHTS
CHALTON, LUTON, BEDS LU4 9UF

AMSTRAD CPC 464

TOOLBOX Our best-selling Graphics & Sprite creator plus M/C Monitor ... £8.95

GRASP Fast & easy graphs and function plots. Education, business hobbies £8.95

Special Offer

For PCW readers only as a thank-you for your support, our new graphics adventure SMUGGLERS COVE is offered for only £1.99 (normally £8.95). SEND THIS AD WITH ORDER

Cheques/POs to:
CAMEL MICROS, Wellpark, Willeys Ave Exeter EX2 8BE. Tel: (0392) 211892.

FOR ZX SPECTRUM

A complete suite of new routines

NEW menu-driven autorun program includes integrated routines to LOAD Print CATalog ERASE files or Print Filespace on cartridges. Intelligent search FORMAT routine. Batch Autocopy of master program. Expert Microdrive Troubleshooter

NEW Microdrive routines to MERGE with Masterfile and Tasword Two Memo Action Masterfile formats and with cartridge version

INCREDIBLE VALUE for only Cartridge £8.95 Cassette £5.95 incl VAT and P&P within UK

MONITOR Ltd 526, Watford Way London NW7 Tel 01 906 0011

USE VTX 5000 on Bulletin boards! Special program £4.99. Spectern for any hardware RS232 board £5.99 (both full facilities down/up load micro-drive/tape send control chrs) Stephen Adams 1 Leswin Road London N16 7NL. Tel 01 254 1808

RECRUITMENT

SOFTWARE ENGINEER
HOME COMPUTER PROGRAMMER

Do You Have

– In depth knowledge of at least one popular home computer at assembler level
– The ability to produce top quality software tuned to a demanding market.
– An enthusiasm for computer games

If so and you are under 25 with preferably a numerate degree then perhaps you d fit in to our expanding software team

Further details from –

The Applications Secretary Hewson Consultants
56B Milton Trading Estate, Milton, Abingdon, Oxon.
Tel 0235 832939

HEWSON CONSULTANTS

COURSES

LEARN TO USE COMPUTERS
AT
COMPUTER WORKSHOP
Details 01 778 9060

RESIDENTIAL COMPUTER COURSE Software/Hardware Weekend/Weeks For further details contact Jaysoft Micro Developments Blacklander Bank Greenham Berwickshire Tel 036 10458.

THIS SPACE FOR SALE
£18
TELEPHONE
PCW CLASSIFIED
01 437 4343 Ext 206

WANTED

Sunshine

is seeking authors for new titles to add to its highly original and successful book range. Experienced and first time authors are invited to submit manuscript ideas or fields of interest. Full details of what we can offer from David Lawrence Book Editor Sunshine 12-13 Little Newport Street, London WC2R 3LD
Sunshine Publishers of Popular Computing and Dragon User

WANTED printer interface Sharp MZ 80K and tape recorder or complete scrap machine. Wanted S/W Sharp PC3201 tape and disc with operating details P Richardson 73 Eden Grove Horfield Bristol BS7 0PQ

Would you like to work in **BRIGHTON** with the rest of the **JAMES BOND** team?
SOFTSTONE needs good m/c programmers to join us for our next 3 major projects
FULL TIME/FREELANCE!
Call Tony on 01-482 5232

QL PROGRAMS REQUIRED Good Basic or M Code Adventures arcade tactical you send I we will consider it. S & S Software 20 St. Nicholas Street, Diss Norfolk

WANTED URGENTLY— I Amstrad Disk Drive Contact Gary Wallace Tel 01-482 5232

EDUCATIONAL SOFTWARE

DEVA Educational Software for 48K Spectrum

LOCK KEEPER ...
REALM ...
CARING FOR YOUR TEETH ...

DEVA EDUCATIONAL SOFTWARE, 38, Upton Drive Chester CH2 1BY

EDUCATIONAL SOFTWARE Most home computers. For your free 24-page brochure send to Jander Software Edgbaston House Broad Street Birmingham

USE YOUR DRAGON* for chemistry O-level revision or comprehensive home finance analysis. Either set (2 tapes each) £6. Send SAE to Penent, PO Box 1 Penicuik Midlothian EH26 9RG for details (state which set) (* These programs require Compusense HI-RES or EDIT + ROM)

TO ADVERTISE *YOUR* SERVICES IN THIS SECTION CALL; P.C.W. CLASSIFIED ON 01-437 4343.



HOME COMPUTER REPAIRS
Look at our fantastic prices on repairs

VIC 20	£21.50
Commodore 64	£24.40
Dragon 32	£21.50
ZX Microdrive	£17.25
ORIC 1/Atmos	£21.00
ZX Interface 1/2	£17.25
ZX Spectrum	£17.95

plus others

Above prices are inclusive for all defects

All repairs carry 3 months warranty on replaced parts

SPECTRUM UPGRADE TO 48K £24.95

Ring for full details: (0234) 213[illegible]

ZEDEM COMPUTER LTD
2 Kimbolton Road, Bedford

SINCLAIR COMPUTER REPAIRS

SPECTRUM £17.50
ZX PRINTER £12.50

Inc. parts, p+p and return insurance. Spectrums upgraded to 48K for £35. At present we cannot upgrade issue one. We like to take care of your computer — please pack carefully — and send with cheque or P.O. to
I.T. (WESTERN) ELECTRONICS
27 Newtown, Trowbridge
Wilts BA14 0BB
Tel: (02214) 64074

T.V. SERVICES OF CAMBRIDGE LTD REPAIRS — SPECTRUM ZX81

Fast reliable repairs by experienced engineers having serviced Sinclair computers since the introduction of the ZX80. Our price is inclusive of all parts labour postage and VAT irrespective of fault* No hidden charges

Spectrum £18.75 ZX81 £11.50 16K Rams £9.95.

*While-you-wait service available

Call or send with Cheque or P.O. to:
TV SERVICES OF CAMBRIDGE LTD
French's Road, Cambridge CB4 3NE
Tel 0223 311371

HEMEL COMPUTER CENTRE LTD

For fast reliable repair service, send your 16/48K Spectrum computer to us. We will repair and return for £20 + £1.60 p&p

Also BBC Commodore Atari and Dragon service

Hemel Computer Centre Ltd
52 High Street,
Hemel Hempstead,
Herts HP1 3AF
Tel 0442 212436

COMPUTER REPAIRS IN SOUTHEND

SPECTRUM, BBC, ELECTRON, CBM 64, VIC 20

MINNIE MICRO ELECTRONICS
12 Eastern Esplanade, Southend
Tel: 0702 62033/615809
Open 7 days a Week

Faulty Spectrum
Ramos-Mecina

a. We will repair your Spectrum correctly
b. Test your Spectrum for 24 hours
c. Find any other hidden faults and repair them free of charge

Send us with cheque/PO for £18.75 to
Ramos-Mecina Dept 5, 34 Murray Road, Salford 7, Manchester M7 9DU
(NO CALLERS AT PREMISES)
Tel 061 792 2260

SPECTRUM REPAIRS

We expertly repair Spectrums for £17 inclusive of parts, labour and return postage. Spectrums upgraded to 48K for £34 including post.

R. A. ELECTRONICS,
133 London Road South, Lowestoft NR33 0AX
Tel: (0502) 66289

CHILTERN COMPUTER SERVICE
FOR FAST RELIABLE REPAIR SERVICE

SPECTRUM £ [illegible]

Parts P&P

WE ALSO REPAIR CBM 64 & 1541, VIC 20, ORIC, DRAGON AMSTRAD PRINTERS & CBM OPTIONS
Ask for details.

We give 3 months warranty on replaced parts. Send computer with details of fault and cheque made out to: Chiltern Computers Ltd

CHILTERN COMPUTER CENTRE
76B DALLOW ROAD LUTON BEDS
TEL. 0582 455684
Overseas [illegible] welcome

BBC SPECTRUM REPAIRS

- Spectrum repairs £12.50 inc parts insurance and p.p.
- BBC B repairs £18.00 parts insurance and p.p.

Send your computer with cheque or P.O. for £18.00 and description of fault to:
SUREDATA (PCW)
Computer Service
45 Wychwood Avenue, Edgware, Middx.
Tel. 01 951 0124

Computer Repair Centre

Have you got problems with your computer? Then call us for
Commodore BBC, Spectrum, Dragon
Mail order or call in
Enfield Communications
135 High Street Ponders End Middx
Tel 01 805 7772

BUSINESS & COMPUTER SERVICES are also computer consultants specialising in small (and very small) businesses. Write or phone us at 294a Caledonian Road London N1 1BA. Tel 01-607 0157

MICRO-SERV

The home computer repair specialist in Scotland

BBC SPECTRUM VIC 20 AND ALL PERIPHERALS 3 MONTH WARRANTY ON ALL REPAIRS

UNIT 6 Denny Workspace
Denny Scotland FK6 6DW
Tel Denny (0324) 823468



FAST SPECTRUM & B.B.C. 'B' REPAIRS

FIRST COMPANY IN ALL U.K. TO INTRODUCE *WHILE-U-WAIT* SERVICE. NOW FIRST TO OFFER AN INTERNATIONAL REPAIR SERVICE ALL INCLUSIVE REPAIRS FROM £7.00!

- MOST SPECTRUM & BBC 'B' COMPUTERS REPAIRED IN 45 MINS
- *WE ALSO REPAIR APPLES, MONITORS, T.V.'S, POWER SUPPLIES, INTERFACE 1 & MICRODRIVES*
- 3 MONTHS GUARANTEE ON ALL REPAIRS
- PLEASE PHONE FOR APPOINTMENT FIRST
- OR PHONE/SEND SPECTRUM/BBC FOR FREE ESTIMATES, ENCLOSING £1.80 (U.K. I.O.M. EIRE C.I.) £6.50 (EUROPE/SCANDINAVIA) FOR RETURN POSTAGE *061-224 1888*
- NO HIDDEN HANDLING CHARGES
- ALL REPAIRS TURNED ROUND IN 24 HOURS!
- EVERY MICRO INSURED FOR RETURN JOURNEY.
- NO DEALERS OR MIDDLEMEN YOU ARE DEALING DIRECTLY WITH A TEAM OF PROFESSIONAL ENGINEERS
- 10 MINS FROM MANCHESTER OR STOCKPORT CENTRES
- OPEN SEVEN DAYS A WEEK TILL 7 P.M. (MON-SAT)

"I have come across a firm that will be more than willing to advise you as to how to remedy your problem. They are called MANCOMP and as well as repairing faulty Spectrums, are also quite willing to discuss your problems with you, and offer reasonably cheap, and (more importantly) correct cures."
PHIL ROGERS 'PEEK & POKE'
"POPULAR COMPUTING WEEKLY" JAN. 1985 (VOL IV NO 1)

WE ALSO DESIGN & MANUFACTURE COMPUTER HARDWARE & SOFTWARE ON A CONSULTANCY BASIS!

MANCOMP LTD. (DEPT. PCW)
Printworks Lane, Manchester, M19 3JP.
061-224 1888
ENGINEERS WANTED

FAST COMPUTER REPAIRS

VIDEO VAULT INTERNATIONAL 10★ REPAIR SERVICE

Spectrums repaired for £19.95 inc. Parts, Insurance and P&P No Hidden Extras. BBC, Commodore 64, Vic 20, Atari, Quoted for

Are you fed up with waiting weeks for your Home Computer to be repaired!!! Why not try the Experts, we offer a full repair service on any Home Computer. All repairs carry a full 3 months guarantee, plus on every Spectrum repaired we send you a free game worth £5.95 for your enjoyment and pleasure.

- ★ While you wait Service by Professional Computer Engineers.
- ★ 3 Months written guarantee on all repairs.
- ★ International repair company.
- ★ All computers sent by mail order turned around in 24 hrs.
- ★ Most Spectrums repaired within 45 minutes.
- ★ All Micros insured for return journey.
- ★ Open 7 days a week.
- ★ School repairs undertaken—discounts available.
- ★ Free software with each Spectrum repaired worth £5.95.
- ★ Over 8 years experience working with computers.

ONLY GENUINE SINCLAIR PARTS USED

Phone today for your free estimate or send your computer to us with £1.75 (UK EIRE I.O.M. C.I.) or £6.50 (Europe/Scandinavia) we will contact you the same day by phone or 1st class Mail should you require quotation first.

TRADE ENQUIRIES MOST WELCOME. ACCESS WELCOMED

VIDEOVAULT INTERNATIONAL LTD (DEPT R23) THE LOGICAL CHOICE

VideoVault

Telephone: Glossop (STD 04574) 66555.
140 High St. West, Glossop, Derbyshire, England.

FREE GAME WORTH £5.95 WITH EACH SPECTRUM REPAIR.

SPECTRUM REPAIRS
Guaranteed six months

Expertly repaired and thoroughly overhauled by professional computer engineers using only top grade components. Manufacturers recommended modifications are fitted and all units are fully guaranteed for six months.

£15.00 all inclusive

Post or personal callers welcome. Upgrade to 48K £25.00

MP ELECTRONICS
The Laurels, Wendling, Dereham, Norfolk NR19 2LZ
Tel: 0362 87327

TO HIRE a computer from Spectrum 48K upwards please phone or write to Business & Computer Services 294A Caledonian Road London N1 1BA Tel 01 607 0157 or 01-997 6457

COMMODORE REPAIRS by Commodore approved engineers. Vic 20 Modulators £6.50 Vic 20 from £14.50 CBM64 etc for more details write or tel G C Bunce & Son 36 Burlington Road Burnham Bucks SL1 7BQ Tel 06286 61696

PROGRAMMERS

CLUBS

BOOKS

DUPLICATION

HUGE INCOME part time from your micro. Details 2 17p stamps to NBE 28 Staples St Mapperley Nottingham

"DATATAPES" for highest quality blanks and data duplication call now for a sample quote. You will find us VERY competitive The Midland Railway Grain Warehouse No 2, Derby St, Burton Upon Trent Staffs (0283) 38199

QL SOFTWARE

FOR SALE

SINCLAIR QL as new inc cartridges and manual £275 ono Tel Blackpool 0253 899780

SHARP MZ700 FASTA control fast all round sports table analysis with printout £8 from Royal Software 4 Priory Rd Bristol BS4 2NF

FOR SALE Sharp personal computer MZ 80A plus five tapes and manuals very good condition £250 Tel Waltham Cross (0992) 21592 or 31298 (N. London)

SINCLAIR QL almost new hardly used £300 Tel 01-946 4621

COMMODORE 6 months guarantee Over 100 games joystick cassette recorder ITT colour TV table £300 ono Cleckheaton 877871

COMMODORE 64 Disc-drive Printer Plotter Cassette Recorder 400 games Many extras desk joysticks trackball and others Excellent condition £550 ono Tel 0924 402455 evenings

CBM 64 1541 Disk & Cassette Deck + MPS801 Printer + Interpod + Joystick + Wordpro + M/c Monitor + Disks Good as new hardly used Worth £800 sell for £525 Also 48K Spectrum as new £75 Tel 04243 2251

ATARI 800XL 64K COMPUTER only 3 months old plus programming book £90 Tel 0342 27072 (East Grinstead)

ATARI SOFTWARE FOR SALE Cassette Disc and cartridge All originals Half price or less For list write to Chris Stone 10 Garston Drive Watford Herts WD2 6LE enclosing an SAE

ATARI SOFTWARE for sale Blue Max Nato Commander Forbidden Forest Encounter Aztec Challenge £6.95 each Write to John Z 11 Lumn Road Hyde Cheshire SK14 2RR

FANTASIA ADVENTURE FOR THE QL. Set in complex cave systems ancient cities and harsh deserts. Features include 200+ locations real-time problems detailed descriptions documentation. Help sheet on SAE wide vocabulary. All this for only £8.80 Send cheque/PO to S D Software 20 St Nicholas St Diss Norfolk

Acorn for Sale

BARGAIN Acorn Electron Sony Trinitron RGB colour monitor Acorn tape recorder and £90 of software very good condition mount only £260 ovno Tel Newton Abbot 3256 after six

DOUBLE DENSITY disc interface for BBC computer £60 Tel Mendlesham 7130

BBC GAMES 10 original superior software cassettes only £18.80 Tel 0342 311046

ACORN ELECTRON excellent condition still under guarantee Complete system including joystick interface, data recorder books and lots of software Offers of £200 and above. Tel Dundee (0382) 738582 after 5pm

FOR SALE Acorn electron turbo load cassette player + £80 of s/w guarantee valid sell £170 or swap for Commodore 64 C2N s/w Brian Tel 01-731 8694 eves.

BBC s/w from 40/70% off Frak Starship Command etc Tel Coventry 855077 no copies Manginber

ACORN Electron with plus 1 + Data Recorder + joysticks £200 of original s/w Cost over £460 sell for £250 Tel 01 890 2454 after 5pm

BBC B — double density disc interface graphics ROM + dual double sided 40T disc drives + software + manuals and leads etc Sell for £850 ono Tel Ongar (02776) 362487 after 5pm Simon

ACORN ELECTRON perfect w/3 x 1 g u der Cassette player manual some s/w £95 Tel 01 776 1033 Mr De-Ville eves w/ends

BBC B — double density disc system 40T + dual double sided disk drive + graphics ROM + software + leads and manuals etc Cost as new £850 will sell for £800 ono Tel Ongar 362487

BBC B OS1.2 with wordwise over £200 of software plus Star Gemini 10x dot matrix printer all items excellent condition the lot £360 ono Tel Leeds 0532 524857 after 6pm

BBC DISK interface (8271 controller) and 0.90 DFS Tel Goole (0405) 86838 Friday Sunday

ELECTRON sell Elite for £8.00 brand new never used Tel 0892 495174 ask for Jan

BBC MODEL B with tape recorder, answer books magazines and games including Aviator and Blagger boxed as new still under guarantee £350 ono Tel Mansfield 753234

BBC MODEL B 1.2 os + tape recorder joysticks original software White Knight Mark II Football Manager and more £250 ono (North West) 020488 6969

ELECTRON s/w for sale. Twin Kingdom Valley Cylon Attack £2.50 each All originals Tel 061-368 6935

ACORN ELECTRON + 1 BBC data recorder 2 joysticks books mags Lots of s/2 boxed excellent condition £250 Percival Tel 01 902 5036

BBC double sided disc drive with interface £190 Tel 061 748 8101

AQUARIUS computer + 16K ext three cartridges two cassettes plus user magazines £90 ona Tel 0294 71314 (Ayrshire)

BBC B with DFS plus Acorn disc drive new unwanted gift with games £500 ono Urgent sale Mr Paresh Tel 01 767 3354

BBC MODEL B 1.2 o/s full working order. Will to swap or sell. Offers to Steven Tel (Glasgow) 041 863 0800 after 6pm

ACORN ELECTRON 1 month old boxed + guaranteed maps + games and books £120 Tel Hornchurch 42642 after 4pm

AQUARIUS COMPUTER data recorder 20K RAM inc Scramble Invaders Millipede Football Manager Bebble + mags £275 all perfect Tel (0204) 386065

BBC B 1.2 o/s, £100 original s/w Computer recorder joystick + computer manuals + radio course all leads good condition £680 Sell £329 Tel 01 458 3660

ELECTRON computer Sanyo monitor Ferguson c/recorder Andex printer First Byte i/f + cable s/w inc Elite + Business Package mags + subs Excellent condition printer needs attention Tel 047 083 297 after 5pm

ACORN ELECTRON tape deck + 12 original games inc Elite 3 Assembly language books + joystick interface + joystick £190 Tel (0642) 551045 after 4pm

ACORN ELECTRON with joystick & interface books, software magazines only £160 Buyer collects. Tel Yelverton (0822) 852649

Commodores for Sale

COMMODORE 64 magazine ZZAP 64 by the same people who publish Crash for Spectrum twelve months subs £10 normally appl issue this offer only 85p including postage Tel 0783 81392

FIVE GAMES for Vic 20 computer Cosmic Cruncher and Mole Attack cartridge and Wacky Waiters Parachute Vic Invaders worth £15.20 will accept £7 ono Send sae to R Vickers 53 Dorset Ave Cheadle Hulme

TWO computer sticks for Vic 20 computer Were £10 each will accept £10 for two ono Brand new R Vickers 53 Dorset Ave Cheadle Hulme

CBM 64 plus cassette recorder joystick games 1 year old still boxed little used £180 Tel 01 567 5581 evenings/weekends

VIC 20, Cassette 1515 printer Alrom expansion unit, 16k/8k/M/C Monitor/Programmers Aid Super Expander Woodcraft 20 cartridges plus £300 worth of cartridges/cassettes/books only £275 ono Tel Redditch 26173 after 2pm

CBM 64 C2N Joysticks books games utilities as new Bought today cost £450+ Sell for £300 Tel Phil on 0952 604154 any evening except Monday

COMMODORE 64 computer 1541 disk drive (brand new) 1701 monitor C2N cassette unit Quickshot Joystick and several magazines for sale Total value well over £980 Will accept £500 Tel 079881 260

COMMODORE 64 C2N Cassette unit Quickshot Joystick, Simons Basic Cartridge plus £70 of top software including Valhalla International Soccer and others Worth £400 sell for £220 ono Tel 0268 26159

CBM 3040 Dual floppy disc drives Perfect working order including manual and "Pet" interface cable including various items software on disc accept first £195 the lot. Tel (0244) 675717

COMMODORE 64 Tower Despair Alien Castle Terror Zaxxon Quo Vadis Blue Max £3.50 each Zim Salabim Forest Doom Beachhead Decathlon and others £3 each Tel Garry after 7pm 01 805 1247

CBM 64 software, Bruce Lee £6 Blue Max £5 Drelbs £5 Tapper £5 Colossus Chess £5 Multisound Synthesizer £8 Raid over Moscow £5 Tel Andrew Frinton (02556) 2451

CBM 64 Dangermouse in Double Trouble and Dangermouse in Black Forest Chateau adventure games £5 each Boxed original cassettes as new Tel (0638) 704836

NEW VIC 20 + C2N Joystick, Motherboard etc Superexpand Books Loads of software on Rom/Cassette Value over £550 Best offer secures Tel 0482 511080

CBM 64 Simons basic cartridge as new £35 or nearest offer Tel Oxford (0865) 962964

COMMODORE 64 Space Shuttle Thompson's Decathlon Sam Speech Admon Speech Two Fathe Mirrorsoft Games Designer Assembler Tutorial Games Educational Software £££s of books The Lot £99 will split Tel Kevin 337 3534

CBM 64 with cassette recorder Joystick b/w monitor 5 books 70 tapes offers £400 up Tel 05827 64777

CBM 64 + Tape recorder B/W monitor 1520 printer plotter £200 worth of original games computer desk Quickshot Joystick + manuals Reasonable offers will split genuine reason for sale upgrading Tel 01-670 1671 eves

CBM 64 1541 disc drive C2N Tape recorder £180 of s/w 2 Joysticks 3 items boxed 4 months old £380 Tel 01 561 5981

CBM 64 software for sale Disc Spy V spy Moon Buggy Crazy Kong Colossal Adventure Ten Little Indians Want Qo II Disc or Tape All originals Tel 0443 730438 after 6pm

VIC 20 C-64 software for sale U.S. & U.K. originals tapes disks cartridges No Rubbish! (Hello Kalil) Write to John Keogh 30 Highwell Avenue Finchley London N12 8QP

CBM 64 + Recorder + Software 3 months old Fully guaranteed must sell hence price £160 Will separate Tel 0528 21167 after 6pm Please

COMMODORE PET (2001/8k) computer integral screen/cassette Programmes £50 Might break (state spares required) exchange Pet plus cash colour monitor 14" Amateur Band Transceiver Electronic Typewriter with interface Tel Wirksworth 3207

COMMODORE 4032 (Upgrade 2001) green screen Integral cassette Sound Box. Detachable full size keyboard Programmes, earphones, Reset switch £200 Would consider colour monitor 14" TV/Electronic Typewriter part exchange Tel Wirksworth 3207

CBM 1541 Disc Drive box of 10 discs £170 Disc version Vic file £12 Tel 0462 811080

COMMODORE 2001 pet—£120 Tel 0386 773775 Mr Krecexi

CBM 16 books programs, joystick £90 Tel Mr Andersen Tunbridge Wells 47347

CBM 64 disc drive print out and usual software cassette £500 Tel. 01 521 4684

COMMODORE 64 C2N cassette unit, lots of software Kempston joystick dust cover worth over £400 will sell for £240 or nearest offer 0382 736316

COMMODORE 64 MPS 801 printer 1000 sheets printer paper £400 worth software 100+ magazines cassette recorder two joysticks total value of £1100+ but sell for only £500 Ring 01 223 1550

CBM software Jupiter Lander Soccer Ghostbusters, Tapper Impossible Mission Jammin Kong Caveton Wimpy Cosmic Commando Also free chess for VIC 20 100 mags and cheap games for Ann 01 607 7440

For Sale

TRS 80 16k Colour Computer Colour Graphic Printer Tape Recorder Joysticks Computer Learning Lab Books Manuals and much Software including Editor assembler and Music Composer £800 The Lot Tel 0443 474526

AMSTRAD CPC 464 plus green monitor very good condition £300 Tel Dave Cottle Ingrebourne (Essex) 04025-49711

48k LYNX + Dixons Cassette player Soft Boxed + all leads + instructions manuals £800 ono Tel Kinross (0577) 64079 (will deliver Scotland)

1 ZX INTERFACE, 1 ZX Microdrive + 2 cartridges unused Gift £72 I pay postage Tel Eric 0608-281517 after 6pm

SEIKOSHEN printers 500A + 50A £10 also £50 vgc Tel Faversham 238819

UNUSED MUGSY for £2.95 all original Tel Radlett 2673

ORI ATMOS 6 months old hardly used plus software inc Hobbit Space Shuttle etc £115 Tel 0802 824422 (after 6pm)

SINCLAIR QL new programs + discs membership £300 Monitor clubs microvatec 853 £150 new Tel 01-740 8643

MAPLIN MODERN 300 Baud with Ceral leads £35 Tel 01-620 7369

2 DISC DRIVES dual Tandem T.M. 100-2 DS/DD 48 TPI Cased with PSU and leads £295 ono Tel 01-387 8691 ex68 (day) 01 942 1975 (even)

BROTHER EP44 Typewriter printer vgc £200 Pysen Organiser, 8k + 16k Data pack £30 Tel 01-981 3818 (days) 01 390 4884 (eves)

MCP 64 4 colour printer/plotter £110 ono Tel St Helens 27788 after 6pm

MAPLIN MODEM plus RS232 unit for Spectrum Fully working 300 Baud CCITT Hard wired and built by Maplins only six months old Bargain at only sixty pounds THE LOT! Tel 0895-20033

ADVANCE 86a IBMPC compatible cassette based 128k full colour great keyboard mint condition £320 ono tel (Worcs) 353399 after 5pm

TELE TYPE ASR 33 £35 Buyer collects. Tel Mrs Young on Bendy 80587 after 1.30pm

5¼" DISC DRIVE 100k VI-Count disc interface for Spectrum vgc Complete with cables + manuals Best offer £150 accepted Tel 02403 6047

CENTRONICS KSR33 Serial printer + keyboard tractor feed spare ribbons + printhead £50 Tel Maidenhead 23284

VTX 5000 modem for Spectrum with instruction tape + Prestel information pack 3 months old hardly used £50 ono Tel 01 223 4706 after 6.30 pm weekends.

SINCLAIR QL JMROM new version OIII and revised manual RS232 Castle I+ Books £310 Tel 01 272 4892

AMSTRAD S/W All original inc Bridgette Time Fruit Machine Galactic Plague On Mummy Sultans Maze Roland Ropes + Cones £18 THE LOT Tel 0245 465101 after 6pm

ORIC ATMOS 48k 2 months old 12 games inc The Hobbit Swap for Spectrum or Sell £110 Tel Lancing 757135

1 DUAL FLOPPY APRICOT PC together with complete suite of pegasus programs consider splitting for the right offer Tel 021 236 2471 Ask for Mr Stone

TELEXPRINTERS 5X type 15 for Sale one brand new offers all working order offers Tel 01-852 4292 after 6pm

ANMSTRAD CPC 464 Green Screen still 6 months guarantee Absolutely mint condition inc Manuals £50 original s/w sell £200 or swaps colour monitor Tel North Allerton 5156 Michael Nevin

AMSTRND CONCISE basic manual Exchange for Forth Tel 0803 402069

MICROLINE + Interface I 2 Cartridges £58 3 months old Tel Canterbury 33905

SHARP MZ 80F + VGC + plus lots of s/w + must sell — £250 ono Tel 01-600 8665 (w/ends) ask for Steve

EASY STOCK Easy Script Future/F EasyFile all £30 each all new Calc Result Easy £30 Calc Result Advanced £45 Dairy 64 Stat 64 Graf 64 all £15 each Vicswitch runs eight 64s to one drive or one printer £50 Tel 021 653 2807 after 4pm

MEMOTECH MTX 512 64k for sale including software books and magazines £220 ono Tel Motherwell (0698) 51235

AMSTRAD ORIGINALS for sale Lords of Time Pyjamarama Football Manager, £4 each Tel (0382) 890702

COMPUTER SWAP

Computer Swap entries are limited to 30 words. Either fill in the accompanying form and send to Computer Swap *Popular Computing Weekly* 12-13 Little Newport Street, London WC2R 3LD or telephone 01-437 4343

All software offered through computer swap must be in original condition and for private sale only

It cannot be swapped

Warning It is illegal to advertise pirated software.

COMPUTER SWAP

Please write your copy in capital letters on the lines below

Name ....

Address ....

....

Telephone ....

SIEKOSHA GP100 printer plus ZXLprint Centronics interface £130 ono. Tel. Leeds (0532) 761084

INDESCOMP PARALLEL and RS232-C interface for Spectrum £20 (no software) 64K RAM card for Vic20 but no RAM chips £10 other chips etc fitted or perhaps swap Electronic Components etc. Mel Saunders 7 Drumcliff Road Thurnby Lodge Leicester LE5 2LH

FOR SALE microdrive and interface one plus software on cartridge and conversion utilities £100 THE LOT Tel 01-203 0329 after 6pm and ask for Dave

Spectrums for Sale

FOR SALE Currah Micro Speech £25 Fuller Sound Box £25 Interface II £15, all with instructions. Nearest offer secures. Send SAE with order to Mr A E Fisher, 15 Alvord Avenue Prestwick, Ayrshire KA9 2JU

SPECTRUM SOFTWARE Alien 8 Pitfall 2 Brian Bloodaxe Technician Ted Boulder Dash Zaxxon Raid over Moscow Fall Guy Supermutt all very cheap write to Paul Ledger 2 Hancombe Garth Chapel Allerton Leeds

Spectrum s/w All original inc. Knight Lore System 1500 Technician Ted Lunar Jet Man open to offers Tel 061 368 8835

Spectrum 48K, Books, various s/w tapes 30 assorted range for computers £180 o.n.o Tel Aylesbury (0296) 748300 after 6pm

Spectrum 48K real cheetah keyboard Dewrtwy Programmable joystick interface Q-Shot j/s Spare fuller FDS keyboard Original s/w 10 computer books. Offers up to £200 Tel (0247) 460185 or (0247) 458251 after 6pm Brian

Spectrum 48K FDS keyboard ZX printer Echo amp Kempston joystick interface + prog interface dedicated recorder over £1000 Original software and books £275 o.n.o. Phone (01) 673 3491 after 7pm Buyer collects

For sale 48K Sinclair Spectrum £50 also interface 1 and one microdrive £50 Everything v.g.c. boxed with all manuals leads etc Contact Peter Hainge 8 Villa Street Birmingham B19 2XR

Magazines Sinclair Users Your Spectrum Nos 4 5 10 Big K No 1 and some C&VG + 1 x ZX Computing £4.00 the lot will not split Tel Sudbury 75288

Spectrum software originals including Cavelon Skool Daze Football Manager Mugsy £3 each many more no cop as Tel 01-572 8963 after 6pm

48K Spectrum with £130 of software + printer worth £300 will sell for £130 Phone 0855 3339

Sinclair QL mint condition model JM Psion packages plus Psion chess Phone Bambridge (0823) 974159 £350

Spectrum Prism VTX 5000 Prestel Modem £80 o.n.o Tel Whalley Bdy 091 2512303 4-6pm 6-10pm Weekdays cost £100 hardly used

48K Spectrum with £200 worth of software Currah speech RAM Turbo Interface Quickshot II joystick Dust cover books posters Sanyo data recorder Worth £400 sell £295 o.n.o Tel 061-445 5913

48K Spectrum low profile keyboard interface I, Microdrive 7in b/w monitor VTX 5000 modem Kempston joystick interface s/w mags, books £450 o.n.o Tel South Dickerson 0709 867010

ZX Spectrum 48K as new boxed £70 Tel Didcot (0235) 814615 after 5pm

Spectrum 48K fuller FDS keyboard Microdrive + spare cartridge Interface I programable joystick interface Quickshot II data recorder Currah speech unit Light pen 18 original games + books £225 o.n.o Tel 01-771 3446 after 6pm

Spectrum 48K excellent condition dead cheap as this is £75 Tel 01-249 8665 after 6pm Mr F[illegible]

Spectrum 48K hardly used Flight simulator + personal banking program £75 Rayleigh (0268) 747307

Original Spectrum software. Hungry Jet Set Willy Chequered Flag Ghostbusters Pinball Wizard Blue Thunder Booty Cassette 50 Warlords Rifle Range Wheelie Winged Warlords Reversi Caterpillar Andreas Galaxy Attack Half price Phil Piper (02*2) 777383

Spectrum Deus Ex Machina £8 Gate Jail £2.50 Pinball £2.50 all in excellent condition Phone Andy on 0632-657038

48K Spectrum and DKTronics keyboard ZX printer Kempston interface Quickshot joystick £800 s/w books and mags worth £800 sell for £250 or swap for CBM64 and disk drive Tel Boston 76477

Spectrum originals crazey prices Zipzap Stonker £2.00 each Gnasher Electron £1.50 each Pedro Pearl Dinky Digger and Xanagrams all £4.00 each Mr P Collins 325a Hatton Road Bedfont Middlesex TW14 9QS

Spectrum 48K for sale complete with leads instruction manual and tape £85 o.n.o Tel 01-348 3924 and ask for Graham

Spectrum original games for sale Eureka £10 Kel Triology £8 Jewels of Babylon £3 Lords of Midnight (unboxed) £5 Doomdarks Revenge £6 Bullseye £1 Special Operation £2.50 Golf £2.50 Tel 0382 454881 Andrew Kerr

48K Spectrum DK Tronics keyboard data recorder loads of software inc Life of Wally Ultimate + many more £100 Tel Christopher Bedford (0234) 80724

48K Spectrum software Football Manager Chess Wheelie Valhalla Liar Eye of Bain Skool Daze Zzoom Timegate etc only £1.95 each (inc p&p) S.A.E. for complete list. Andrew Sorey 162 Orton Road Carlisle Cumbria.

Spectrum software all original Cyrus is Chess Vu calc Flight Simulation 3D Strategy Supercode II Arcturus etc cost over £50 sell £18 Phone 01 827 5453

Spectrum software for sale Trans express (all programs) £5 Jumping Jack, Auto Sonics Orbiter Ground Attack £2.50 each Frogger Time Bandits Nightlite £2 each Tel Llanelli 772132 (evenings or weekends)

Sinclair RS-232-C lead for Spectrum cost £14.95 Never been used £5.50 including postage. Phone 0228 282645

Spectrum software for sale Many titles all original £2 to £3 each Phone 0228 286545

Gemini Business software for Spectrum 48K Cashbook and final accounts on three cassettes plus manual Cost £95 will accept £30 Phone 0228 282646

Spectrum hardware manual £3 Spectrum ROM Disassembly £6 Spectrum Machine Code Sinclair £4 Spectrum Interface Projects £3 Simple Interfacing Projects £3 Spectrum Tape Copier + Controller Board £10 Tel 061-432 4538 evenings

48K Spectrum Microdrive with cartridges DK'Tronics keyboard Fox programmable joystick interface TAC2 joystick cassette player software and books All in excellent condition £200 Tel Nuneaton 0203 346848 after 5pm

48K Spectrum ZX printer with 10 rolls of paper Programmable joystick interface Over 200 games mags £190 o.n.o Tel 061 680 7036

ADVENTURE HELPLINE

Pirate's Cove on Vic20 How do I get through the force field and do I need the mirror? If so how? R Elcome 100 Victoria Road West Hebburn, Tyne and Wear

Tower of Dispair on Spectrum. How do I get past the angel of death at the tin and cross the bridge? R Elcome 100 Victoria Road West Hebburn Tyne and Wear

Hobbit on Spectrum. How do you kill the dragon and get out of the goblins dungeon? Ben Dewhurst 410 North Road Yate Bristol BS17

Jewels of Babylon on Amstrad. How do you deal with the smooth rock the lion and the crocodile? What use are any of the objects except the watch? Michael Fox 8 Lawson Close, Aldridge Walsall

Adventureland on Vic20 How do I awake and kill the dragon? What do I do when I'm in the chasm? S Macgowen, 47 Hallgarth Circle Kendal Cumbria LA9

Espionage Island on Spectrum. I cannot find the combination for the safe Can anyone help? What use is the flight operator? Mark Robertson, 4 Churchtown Close Dublin 14 Ireland.

Perseus and Andromeda on Commodore 64 How do I fly – I've got the helmet shield discus and sandals? Peter Dent 11 Staverdale Street West, Seaham, Co Durham

Colossal Adventure on Spectrum. How do you move the grill covering the machinery? Robert Wands 50 Tennyson Drive Tollcross, Glasgow G31 (041 641 8317)

Message From Andromeda on Spectrum. It was alright until I got to the square! How do I get past the rooms that surround it – I keep trying to get past the guard but always fail? Paul Grajnert 211 Long Lane Wheatley Halifax W Yorks

Planet of Death on Spectrum. I have got the spaceship and flown over to the hangar What do I do next? Nigel Clarkson 46 St Bedes Close Crossgate Moor Durham DH1 4AA

Zkul on QL. How do you get past the pedestal with the black cup? How do you get the Coesal? How do you speak with the dwarves? What do you say to them? Martin Davidson 47 Cledashal Road, Birmingham B6 4KS

Message From Andromeda on Amstrad. What do you do with the glowing sphere in the crystal chamber? S Turner 1 Church Gate Cottages, Udimore, nr Rye East Sussex TN31 6BA (Brede 882308)

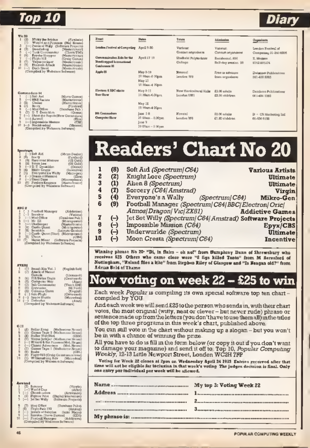
Spiderman on Spectrum. I only need Electro's gem but I cannot defeat him or start presses I have the hologram Michael Barton, 184 Highfield Lane Newbold Chesterfield Derbyshire

Snowball on Commodore 64. After going up from the winch room I can only wander around Please help! Jason Dore 3 Park Drive Wickford, Essex (Wickford 62482)

Pirate's Cove on Vic20 Help! Can anyone tell me how to get off Pirate's Island and what is best to take with me? Neal Todd 19 Langholm Avenue, Warminster Wilts BA12 8EW (Warminster 213712)

The Count on Vic20 I'm in the coffin on the third day How do I kill the count? Mark Weatherill, Linslade Leighton Buzzard Beds (0525-370436)

Fantasia Diamond on Amstrad What does The key is inside mean? What does 'Music is the key' mean? How do I open the trapdoor? How do I open the chest in the Secret Room? Lee Madden 24 St Wilfrid's Avenue Leeds LS8 3PX.



Top 10

Vic 20

1	(2)	Micky the Bricky	(Firebird)
	(1)	Wizard and Princess	(Mel House)
3	(—)	Perils of Willy	(Software Projects)
4	(3)	Doodlebug	(Mastertronic)
5	(—)	Tank Commander	(Thorn EMI)
6	(4)	Psycho Shopper	(Mastertronic)
7	(—)	Flight 015	(Craig Comm)
8	(7)	Vegas Jackpot	(Mastertronic)
9	(5)	Phantom Attack	(Mastertronic)
10	(—)	Duck Shoot	(Mastertronic)

(Compiled by Websters Software)

Commodore 64

1	( )	Soft Aid	(Micro Games)
2	(—)	BMX Racers	(Mastertronic)
3	(8)	Chiller	(Mastertronic)
4	(7)	Booty	(Firebird)
5	(—)	Mini Office	(Database Pub)
6	(7)	D T Decathlon	(Ocean)
7	(—)	Shoot the Rapids	(New Generation)
8	(—)	Airwolf	(Elite)
9	(—)	Impossible Mission	(CBS)
10	(—)	Blockbusters	(Macsen)

(Compiled by Websters Software)

Spectrum

1	(—)	Soft Aid	(Micro Dealer)
2	(5)	Booty	(Firebird)
3	(8)	Raid over Moscow	(US Gold)
4	(8)	Bruce Lee	(US Gold)
5	(—)	D T Decathlon	(Ocean)
6	(4)	Moon Cresta	(Incentive)
7	(1)	Everyone's a Wally	(Microgen)
8	(—)	Ocean of Hazard	(Elite)
9	(—)	Eskel Dane	(Microsphere)
10	(8)	Finders Keepers	(Mastertronic)

(Compiled by Websters Software)

BBC B

1	( )	Football Manager	(Addictive)
2	(—)	Snooker	(Visions)
3	(—)	Mini Office	(Database Pub)
4	(—)	Mr EE	(Micropower)
5	(—)	Challenger	(Mastertronic)
6	(4)	Castle Quest	(Micropower)
7	(8)	Scrabble	(Leisure Genius)
8	(—)	Castle Quest (Disc)	(Micropower)
9	(8)	Ultron	(CBM)
10	(7)	Manic Miner	(Software Projects)

(Compiled by Websters Software)

ATARI

1	(1)	Smash Hits Vol. 1	(English Soft)
2	(7)	Attack of Mutant Camels	(Llamasoft)
3	(6)	F15/Strike Eagle	(Centresoft)
4	(3)	Computer War	(Atari)
5	(3)	Sub Commander	(Thorn EMI)
6	(5)	Encounter	(Hi Tech)
7	(9)	Colossus Chess	(English)
8	( )	Solo Flight	(Centresoft)
9	(—)	Space Shuttle	(Microdeal)
10	(—)	Defender	(Atari)

(Compiled by Websters Software)

C 16

1	(2)	Roller Kong	(Melbourne House)
2	(1)	Games Tape 2	(Melbourne House)
3	(4)	Roller War/Blitz	(CBM)
4	(7)	Vegas Jackpot	(Melbourne House)
5	(—)	Wizard & the Princess	(Mel. House)
6	(—)	Classic Adventure	(Mel. House)
7	(7)	Games Tape 1	(Melbourne House)
8	(8)	Books	(CBL)
9	(8)	Flight 015	(Craig Communications)
10	(1)	Williamsburg Adv	(Microdeal)

(Compiled by Websters Software)

Amstrad

1	(2)	Sorcery	(Virgin)
2	(—)	World Cup	(Artic)
3	(—)	Ghostbusters	(Activision)
4	(2)	Fighter Pilot	(Digital Integration)
5	(—)	Jet Set Willy	(Software Projects)
6	(7)	Mini Office	(Database Pubs)
7	(6)	Flight Path 737	(Anirog)
8	(—)	Jewels of Babylon	(Inter Micro)
9	(—)	Snooker (Steve Davies)	(CDS)
10	(—)	Football Manager	(Addictive)

(Compiled by Websters Software)

Diary

Event	Dates	Venue	Admission	Organisers
London Festival of Computing	April 5-20	Various: Contact organisers	Various: Contact organisers	London Festival of Computing 01-240 0806
Communication Aids for the Handicapped International Conference 85	April 17 19	Sheffield Polytechnic College	Residential £86 Half-day session 20	E. Meggan 0742 665274
Apple 85	May 9-10 10 00am-6 00pm May 11 10 00am-4 00pm	Novotel London W6	Free in advance from organisers	Database Publications 061-456 8383
Electron & BBC micro User Show	May 9-11 10.00am-6.00pm May 12 10 00am-4 00pm	New Horticultural Halls London SW1	£3.00 adults £2.00 children	Database Publications 061-456 8383
8th Commodore Computer Show	June 7-8 10 00am – 6.00pm June 9 10 00am – 5 00pm	Novotel London W6	£2.00 adults £1.50 children	D + CS Marketing Ltd 01-930 8158

Readers' Chart No 20

1	(8)	Soft Aid *(Spectrum/C64)*	**Various Artists**
2	(2)	Knight Lore *(Spectrum)*	**Ultimate**
3	(1)	Alien 8 *(Spectrum)*	**Ultimate**
4	(7)	Sorcery *(C64/Amstrad)*	**Virgin**
5	(4)	Everyone's a Wally *(Spectrum/C64)*	**Mikro-Gen**
6	(9)	Football Manager *(Spectrum/C64/BBC/Electron/Oric/Atmos/Dragon/Vic/ZX81)*	**Addictive Games**
7	(–)	Jet Set Willy *(Spectrum/C64/Amstrad)*	**Software Projects**
8	(–)	Impossible Mission *(C64)*	**Epyx/CBS**
9	(–)	Underwurlde *(Spectrum)*	**Ultimate**
10	(–)	Moon Cresta *(Spectrum/C64)*	**Incentive**

Winning phrase No 20: "Di, in flairs – oh no!" from Humphrey Dunn of Shrewsbury who receives £25 Others who came close were "2 figs killed Tonto" from M Beresford of Nottingham, "Roland flies a kite" from Stephen Riley of Glasgow and "Is Reagan old?" from Adrian Bold of Thame

Now voting on week 22 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

Voting for Week 22 closes at 2pm on Wednesday April 24 1985 Entries received after that time will not be eligible for inclusion in that week's voting The judges decision is final. Only one entry per individual per week will be allowed.

Name .... My top 3: Voting Week 22

Address .... 1..

.... 2..

.... 3..

My phrase is: ....

New Releases

INSTANT LINE

At last! A piece of independent QL software that makes the QL look like a powerful machine instead of a ZX81 – *Graphiql* is a goody

Although it is short on proper colours, the use of shading effects and the hi-resolution detail make the QL an obvious choice for drawing packages *Graphiql* is from Talent whose previous QL offerings – text adventures like *West* and *Zkul* – were also a cut above average

The first thing you notice is that the program loads in a few seconds, considerably faster than a Spectrum program, unlike other QL efforts. It is very sophisticated indeed, way beyond the usual move the cursor, fill in the box efforts

You can control precise details like the shape of the cursor and the number of pixels moved in each step Details of the current state of colours chosen, pixel position and so on can be instantly displayed using a help option Obviously you get rubber banding (a kind of instant line drawing you can quickly change) and area filling – but in the latter you can choose a variety of texture styles You can also design shapes and copy them repeatedly, rotate them about various axis, and put text on screen.

Talent have even designed a simple Superbasic/machine code hybrid program that helps you to customise the print-out routines so that they will work on your own printer.

The manual is excellent, the packaging which includes a demo microdrive impressive If I have a worry it is the way the commands work – you have to type 'blind' the two or three letter instruction without seeing what you are typing Nevertheless, it's an excellent program Maybe things are looking up for the machine

Program *Graphiql*
Price *£34 95*
Micro *QL*
Supplier *Talent*
Curran Building
101 St James Road
Glasgow G4 0NS

VAST PARODY

Whilst we all wait, in vain perhaps, for Melbourne House to produce the multi cassette mega edition of the adventure game version of *Lord of the Rings*, we might take some solace in an excellent and vast parody called *Bored of the Rings*

All the old favourites are there – Fordo, Spam, etc – their characters cruelly mutated into a bunch of cowardly wimps. Frodo gets to take the ring because he's the only one foolish enough to accept it and so on.

I suspect that parts of the parody are direct steals from the book *Bored of the Rings* put out a while ago by National Lampoon.

The adventure extends over three vast parts and is a parody not only in text but pictures – with the help of the mighty Quill and illustrator The text has been redesigned to look suitably elven (very pretty too) and some of the pictures are direct steals from that Melbourne House effort.

Language analysis is quite sophisticated – there are several other characters to whom you can communicate using the form "Gandalf, how are you, my old mucker?" and you may get some response

Some of the humour is fairly juvenile but some is pretty funny too Similarly, although the packaging looks a bit cheap the actual game is very professional.

Personally I would rather spend months unravelling the silliness of Bored than days on a self important 'serious' epic

Program *Bored of the Rings*
Price *£5 95 (£8 95 microdrives)*
Micro *Spectrum*
Supplier *Delta 4 Software*
The Shieling
New Road
Swanmore
Hants SO3 9PE

OLD-FASHIONED

Remember the days when you loaded your Spectrum with the immortal phrase *Load"" Code*? Well you can wallow in nostalgia with *Superpower*



Unfortunately, the loading routine isn't all that's old fashioned. The game concept and mechanics are painfully slow and badly thought out – perhaps 18 months ago Howard Marketing might have had something, but not today.

There are far better implementations of two player wargames around from CCS and Lothlorien, for example – although I for one can't see the appeal of waiting half an hour for your opponent to finish with the Spectrum before you can even get to look at the map

The whole point of a micro should be to provide an opponent who plays a challenging game, not a computerised board

Program *Superpower*
Price *£4 95*
Micro *Spectrum 48K*
Supplier *Howard Marketing*
PO Box 91
Felixtowe
Suffolk IP11 7LJ

This Week

Program	Type	Micro	Price	Supplier
Digger Barnes	Arc	Amstrad	£8 95	Cable
Cribbage	S	Amstrad	£6 95	Gamma
Bug Eyes	Arc	BBC	£7 95	Icon
Brain Mania	Arc	BBC	£7.95	Icon
Blagger goes to Hell	Arc	Commodore 64	£9 95	Alligata
Theatre Europe	S	Commodore 64	£9.95	PSS
Sprite Editor	Ut	MSX	£6.95	Cable
Graphical	Ut	QL	£34.95	Talent
QDoctor	Ut	QL	£17 10	Ariolasoft
Bored of the Rings	Ad	Spectrum	£5.95	Delta 4
Archon	Arc	Spectrum	£10 95	Ariolasoft
Chuckie Egg 2	Arc	Spectrum	£4 90	A + F
Gold mines Geriatocia	Arc	Spectrum	£9 95	Electrosoft
Hard Hat Mack	Arc	Spectrum	£8.95	Ariolasoft
One on One	Arc	Spectrum	£8.95	Ariolasoft
Merit Chemistry	Ed	Spectrum	£5.95	Merit
Arnhem	S	Spectrum	£5.95	Cases Computer
Gold Simulations	S	Spectrum	£4 00	Watsoft
Gyron	S	Spectrum	£9 95	Firebird

New Releases

Pick of the week

SUPERNATURAL

The Evil Dead – the game – attracted itself something of a cult following, not unlike the film on which it was based. Not a trace of video nasty in the latest Palace offering however, this time they have plumped for the straight supernatural in *Cauldron*

You control a broom-stick riding hag who must fly around the place collecting coloured keys to enter dungeons (six in all) wherein you find items for a brew which will save the world from the 'Great Pumpkin'

The graphics are excellent, comparable to *Sorcery* on the Amstrad certainly and the action is fast, but tricky, as you avoid ghosts, pumpkins, molten lava and bats in pursuit of your quest. For once, the blurb on the cassette box approaches reality "sets a new standard in graphic realism" says Palace. Well, as near as makes no difference on the 64, I say

Great fun to be had here I suspect, and although it's not exactly breaking new ground as far as game concept goes, it certainly looks pretty on the telly

Program *Cauldron*
Price *£7.95*
Micro *Commodore 64*
Supplier *Palace Software*
275 Pentonville Rd
London N1

EXTRA FRILLS

Slowly QL software trundles on given an extra lurch of effort by the considerable drop in Microdrive prices. *QL Sketchpad* is an attempt to implement a fairly simple but functional graphic drawing program on the machine

There are all the basic functions you'd expect. A neat line draw (from joystick if you have one), rectangles, circles, arcs, ellipses, triangles, different colour fills. Extra frills include changing the rate of movement of the cursor and putting text onto the screen

As I said, it's fairly basic, and on the version I received a couple of basic functions like Fill were not yet implemented (the company will update your microdrive for nothing though) but it appears to work, is well designed and the manual looks good. For a mere £14.95 you can get a program that does approximately the same things, although not quite as much, as one on the Spectrum costing £5.95.

Program *Sketchpad*
Price *£14.95*
Micro *QL*
Supplier *Sigma Research*
231 Coldhams
Lane
Cambridge

ABSTRACT

Gyron looks fairly stunning, graphically there is little to rival it in the entire world of Spectrum programs and yet at first it is a little off putting – it looks like you need an IQ of around 2,000 to play it.

But no. Prod a few controls or waggle the joystick and you discover that actually the game can be played. It isn't all clever graphics – it's only winning that's awsomely difficult, but then that's probably why Firebird are giving away a Porsche 924 to whoever cracks it first

It's pretty hard to say what exactly *Gyron* is about, the game is abstract in the extreme – it looks like a maze game with 3D graphics, but then parts of it look like thegrams from geometry text books

Picture this, an open topped 3D maze, a little like *Hunt the Wumpus* except that it scrolls very smoothly indeed. Using the joystick you move around within the walls of the maze. Parts of this maze are protected by towers whose firepower can drain your energy, these jut up above the maze area and are only vulnerable to your firepower on one side. There's another problem, the towers have a bizarre relationship with one another such that blasting one may make it simply relocate to another area where it is even more lethal

Worse still, there are giant, rover like, spheres between the walls that are very dangerous indeed. The spheres work to a logical routine and you can work out the pattern if you're clever enough. There is a problem in that the pattern repeats every 15 billion years

Gyron is as complicated as you want it to be, side A *Atrium* is easier and simpler than the full game on side B called *Necropolis* – it's possible to get somewhere with the game after a couple of goes. After that you need brains and planning. Its virtues are similar to Legend's *Komplex* in some ways, it looks utterly original, is compulsive and I find the abstract qualities a blessed relief from animated sprites

Program *Gyron*
Price *£8.95*
Micro *Spectrum*
Supplier *Firebird*
Wellington House
Upper
St Martins Lane
London WC2 9DL

This Week

Overlords	S	Spectrum	£6.95	Lothlorien
Bank Account	Ut	Spectrum	£5.00	SD Micro System
Calorie Controller	Ut	Spectrum	£6.00	SD Micro System
Flexi Filer	Ut	Spectrum	£6.95	SD Micro System
General File	Ut	Spectrum	£4.50	SD Micro System
Graph Generator	Ut	Spectrum	£5.00	SD Micro System
Home Budget	Ut	Spectrum	£5.75	SD Micro System
Home Computing Pack	Ut	Spectrum	£5.00	SD Micro System
IQ Test	Ut	Spectrum	£5.75	SD Micro System
Microdrive Controller	Ut	Spectrum	£7.00	SD Micro System
Pagepro System	Ut	Spectrum	£4.00	SD Micro System
Personal Filing	Ut	Spectrum	£5.00	SD Micro System

Key **Ad** – adventure, **Arc** – arcade, **Ed** – education, **S** – strategy-simulation, **Ut** – Utility

ON THE SET

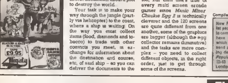
Blagger of 'not at all like *Manic Miner* really – honest' fame has taken some big steps in the direction of originality with *Blagger goes to Hollywood* (ZTT get those lawyers at the ready)

Actually the game doesn't have much to do with the well known Trevor Horn backing musicians, but there is a plot connection with Hollywood

You are *Blagger* – thief – and what you're after is nothing less than the latest Steven Spielburn epic (spot the hilarious parody)

Getting your hands on the film involves running around 12 different film sets looking for stray props – each of these has a connection with various characters also running around – famous names from movieland Hit the right character with the right prop and eventually when you've done all 12 the way into the 13th opens and after a lot more effort you get the film

The sound and graphics are what make the game though – you get a high-angle Zaxxon-like view of the film sets below giving the look of 3D – the various other monsters are also much better characterised than usual, the music is, it seems, around a dozen or so famous movie tunes tacked together into a brainbasting melange



The skills of the game is really a figuring out the connection between prop and character whilst dodging nasties with the standard arcade skills Personally I think the game isn't really original enough since it costs £9 95 and is obviously intended to be something special. Nevertheless it's a goodie

Program *Blagger goes to Hollywood*
Price *£9 95*
Micro *Commodore 64*
Supplier *Alligata 1 Orange Street Sheffield S1 4DW*

TRADE-OFF

Alcatraz II (The Doomsday Mission) is another cheapie from Scorpio Gamesworld continuing the exploits of Alcatraz Harry after his previous escape from 'The Rock'. You are placed outside the prison walls (amongst thick jungle – a bit like *Sabre Wulf*) mysteriously in possession of secret documents about a plot to destroy the world

Your task is to make your way through the jungle (partly via helicopter) to the coast, where a ship is waiting On the way you must collect items (food, diamonds and tobacco) to trade with other convicts you meet, in exchange for information about the destination and course, etc, of said ship – so you can deliver the documents to the correct people The graphics aren't outstanding – but OK considering the price

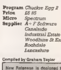
Not a classic, but a thoroughly adequate pocket-money arcade adventure

Program *Alcatraz II*
Price *£1 99*
Micro *Spectrum 48K*
Supplier *Scorpio Gamesworld 307-313 Corn Exchange Building Manchester 4*

COMPLEX

Chuckie Egg 2 is now released, a 120 screen follow-up to the original game which featured the platform and ladders orientated adventures of an everyday egg collector with a funny hat Even when it came out several eons ago the game was in some respects old hat, but the graphics of the very unthreatening but determined (and fatal) ducks made the game That and an excellent sense of timing made the game

Chuckie Egg 2 retains, first of all, the little yellow egg collector and the theme is collecting the parts of Easter eggs The basic idea of dodge and collect is here, too, but then that's true of every multi screen arcade gamer since *Manic Miner* *Chuckie Egg 2* is technically cleverer and the 120 screens are quite different from one another, some of the graphics are bigger (although the egg collector remains diminutive) and the tasks are more complex – you need to collect different objects, in the right order, just to get through some of the screens.



Credit must be given to A + F for creating a game with 120 genuinely different screens – it makes the game addictive if only to see what lies beyond the current screen On the other hand, I think the game has less character than the original – putting in a vast array of different sprites seems to me to only make the game like all the other multiscreen epics

Program *Chuckie Egg 2*
Price *£6 95*
Micro *Spectrum*
Supplier *A + F Software Canalside Industrial Estate Woodbine St East Rochdale Lancashire*

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market. If you have a new game or utility which you are about to release send a copy and accompany ing details to New Releases, *Popular Computing Weekly* 12-13 Little Newport Street, London WC2R 3LD

This Week

A + F Canal Side Industrial Estate Woodbine Street East Rochdale, OL16 5LB, 0706 341111 **Alligata** 1 Orange Street, Sheffield, S1 4DW, 0742 755796 **Ariolasoft** Retail **Cable** Cape House, 52 Limbury Road Luton Beds LU3 2PL 0582 591493 **Cases** Computer 14 Langford Way, Blackheath London SE3 7TL 01 858 0763 **Delta 4** The Shieling New Road Swanmore Hants SO3 2PE, 04893 5800 **Electrosoft**, 54 Beccles Rd Bradwell Gt Yarmouth NR31 8HF, **Firebird** Wellington House Upper St Martin's Lane London WC2H 9DL 01 379 6755 **Gamma**, 12 Milverton Road, London NW6 7AS 01-459 2652. **Icon** 65 High Street Gosforth Tyne and Wear NE3 4AA 091 2846966 **Lothlorien** 56a Park Lane, Poynton Cheshire, SK12 1AE 0625 876642 **Merit** Merit House, Cranbourne Road, Potters Bar Herts EN6 3JY 0707 57211 **PSS** 452 Stoney Stanton Road, Coventry, CV6 5DG, 0203 667556 **SD Micro System**, PO Box 24 Hitchin Herts SG4 0AE **Talent**, Curran Building, 101 St James Road Glasgow G4 0NS, 041 552 2128 **Watsoft**, 49 Abbotsview Haddington East Lothian

On the horizon

The main problem when evaluating any new program, is that of limited horizons.

The first word processor I used was *Apple Writer* on the Apple II, and it was marvellous – at first. After a time, however, I began to find it limiting yet *Apple Writer* was very easy to use

The *Wordwise* word processor for the BBC computer is also easy to use, and I selected it for that reason. But *Wordwise* is very limited compared with what I consider to be the best version – Acornsoft's *View* Many people who bought *Wordwise* now wish they had purchased the initially more difficult to learn *View*

View is more difficult to learn because there is far more to learn, and far more one can do Now *View* looks pretty limited in comparison with my present word processor, *Perfect Writer* on my Advance 86 With *View* one has to buy special printer drivers for features such as underlining – with *Perfect Writer* one is able to configure the system exactly as wished without any extra cash investment. *View* is more flexible than *Wordwise*, but *Perfect Writer* is inherently the most flexible of the lot.

When considering which piece of software to buy one should think to the future For example, there are soon to be four or five different version of Logo for the BBC micro Having used Logo within varying teaching environments I fear that arguments about the utility of Logo will be restricted to primary schools Though Logo is a fine language for teaching programming and mathematics to primary children and its future seems secure, I believe that, ultimately, Logo will be of greater use in the secondary and tertiary sectors

For example, using Logo, I have developed systems for analysing differential equations, and an interpreter for the 'fifth generation' computer language Prolog Neither of these applications is directed towards primary education.

I believe that when a Logo is evaluated seven points are of particular importance if the version is to be of any widespread utility The points are given in no significant order

1) Can characters be displayed on the graphic screen? For many Logos such display is not possible – strange as it seems
2) Is the version designed for easy interface to devices (other than the obligatory turtle)? In some versions of Logo there is no provision for a single joystick, and, though there equivalents to *Peek* and *Poke*, there are in some cases no equivalents to the Z80 *In* and *Out*.
3) Is it possible to use Local variables within procedures? Many versions of Logo have no provision for such variables which is a great drawback for development work
4) How accurate is the arithmetic, and what are the restrictions on number for input to (for example) turtle graphics routines? Some Logos restrict numbers for input angles and distances
5) Given the nature of Logo as a list processing language, how effective are the language routines to handle recursion? Some Logos are so restricted in this respect that many standard programming examples are of little use.
6) The biggest problem with Logo is syntactical. Due to Logo s inherently illogical prefix form, so how are such confusions treated? Though the prefix form is easily understood in *FD 50 RT 90* most Logo systems cannot cope with the structurally equivalent *SAVE "FILENAME RT 90* because Logo assumes that *RT 90* is the list of procedures to save under the name *Filename*.
7) For effective programming a *Trace* facility is desirable – unfortunately trace facilities are rather uncommon.

Recent claims and counter claims about Logo have been concerned particularly with Logos for the BBC B computer, but it is worth pointing out that Logos on two low-cost microcomputers satisfy (to varying extents) all the above criteria – apart from syntax.

These are Terrapin Logo for the Commodore 64 and Dr Logo on the Amstrad

Boris Allan

Aliquot divisors

Puzzle No 124

The aliquot divisors of a number are all those whole numbers which divide into it exactly, including 1 but *excluding* the number itself.

So if I take the number 1981, I find that it has aliquot divisors of 1 7 and 283 If I add these numbers together I get a total of 291, and so I take this new number and find *its* divisors These are 1, 3 and 97 which make a total of 101 As this number is prime, and remembering what is meant by aliquot divisors, it has only one divisor, 1 In this way, the number 1981 has reduced to 1 in just three steps

Taking the numbers 1980 to 1990 inclusive, can you find the number of steps needed in each case to reduce each set of aliquot divisors to 1? This should be quite easy except for just one of the values which seems to extend without limit!

(Note that when calculating the divisors, all whole number divisors should be counted and not just *prime* divisors.)

Solution to Puzzle 148

Only six players scored runs To make a total of 100 these scores must have been 16, 16, 17, 17, 17, and 17 runs

```
10 DIM S(7)
20 DATA 8,16,17,23,24,29,40
30 FOR N=1 TO 7:READ S(N):NEXT N
40 FOR A=1 TO 7
50 FOR B=1 TO 7
60 FOR C=1 TO 7
70 FOR D=1 TO 7
80 FOR E=1 TO 7
90 FOR F=1 TO 7
100 LET T=S(A)+S(B)+S(C)+S(D)+S(E)+S(F)
110 IF T=100 THEN PRINT S(A);S(B);S(C);S(D);S
    (E);S(F)
120 NEXT F,E,D,C,B,A
130 END
```

The problem involves finding which of the possible scores given, can be combined to make a total of 100

The program places these scores into an array (A), and sums all possible combinations of the scores by means of the six *For/Next* loops If the total so achieved equals 100 then the individual scores are printed out.

Winner of Puzzle 148

The winner despite a typographical error in the printed data, is Iain Sibley of Furnace Green, Crawley, West Sussex, who receives £10

Rules

The closing date for Puzzle No 124 is May 13

The Hackers

Our new computer system is terrific!

You need only type in the NAME of the country you want to obliterate!

It's the ultimate in user-friendliness!

ADVERTISEMENT

